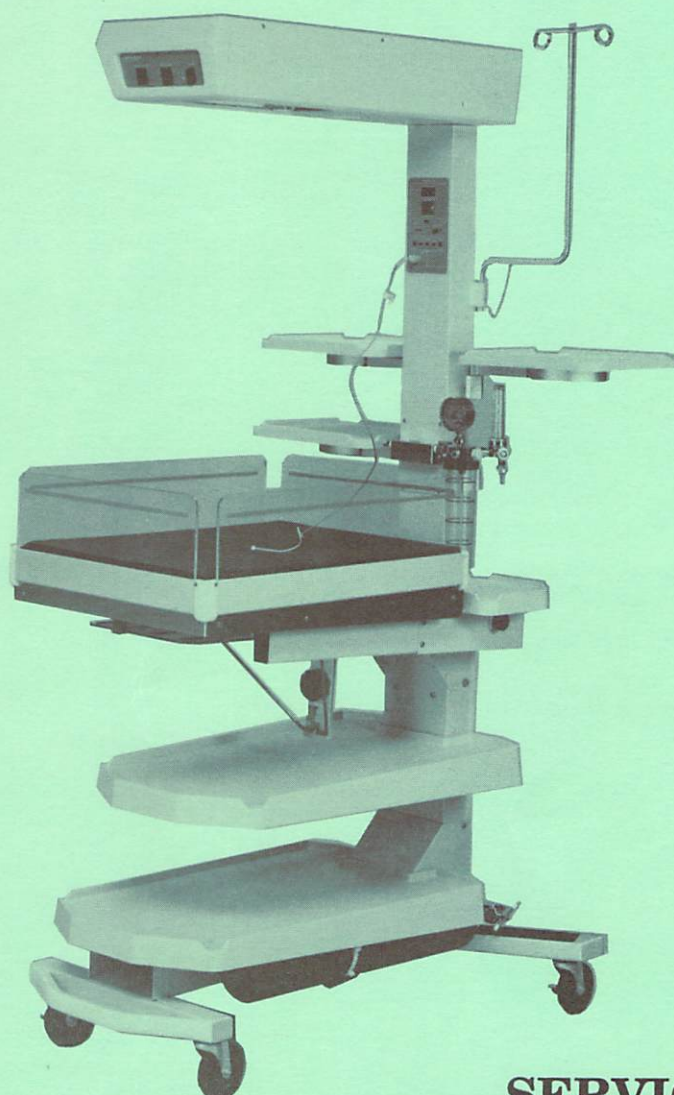


AIR-SHIELDS®

- **INFANT INTENSIVE CARE SYSTEM**
- **WALL MOUNTED INFANT INTENSIVE CARE SYSTEM**
- **FREE STANDING INFANT WARMER**
- **WALL MOUNTED INFANT WARMER**



SERVICE MANUAL

Air-Shields



**Vickers
Medical**

LIMITED WARRANTY

The product being described in this manual is warranted against defects in materials or workmanship for one year from the date of shipment from Air-Shields, Hatboro, with the following exceptions.

All consumable and disposable products are guaranteed to be free from defects upon shipment only.

Calibrations are considered normal maintenance and are not included in the 1 year warranty.*

During the warranty period any defective parts other than those listed above will be replaced at no charge to the customer. There will be no labor charge for replacing the parts within the continental U.S.

This warranty is rendered void and Air-Shields cannot be held liable for conditions resultant therefrom if:

1. Damage to the unit is incurred as a result of mishandling.
2. The customer fails to maintain the unit in a proper manner.
3. The customer uses any parts, accessories, or fittings not specified or sold by Air-Shields.
4. Sale or service is performed by an non-certified service/dealer agency.

This warranty is in lieu of all other warranties, expressed or implied, and Air-Shields shall in no event be liable for incidental or consequential damages including loss of use, property damage, or personal injury resulting from breach of warranty.

*The Accreditation Manual for Hospitals requires each piece of equipment is to be tested prior to initial use and at least annually thereafter. To comply with this standard, we recommend that you participate in our Accreditation Testing Compliance Program during the warranty period. This service can be performed by certified technicians through our Product Service Group and authorized dealers.

SERVICE

For optimal performance, product service should be performed only by qualified service personnel. Product Service Group instrumentation specialists are located throughout the United States and are dispatched for required maintenance by calling 800-523-2404. Customers outside the U.S. should contact their local factory-authorized Air-Shields distributor for service.

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Change 02	3/86
Change 03	9/86
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Change 05	1/88
Change 06	4/92
Change 07	12/92

Air-Shields  Vickers
Medical
330 Jacksonville Road, Hatboro, PA 19040

PLEASE READ

Please check the A page for change information.

Since Air-Shields conducts a continuous product improvement program, circuit and component improvements are sometimes incorporated into equipment before they can be incorporated into the printed manuals. When this occurs, changed material is provided on separate sheets at the rear of the manual or under separate cover in the form of a change package. Changed material on each page of text is indicated by a vertical bar in the margin next to the changed material, as shown on the right.

THIS MANUAL CONTAINS PROPRIETARY INFORMATION. REPAIRS AND AUTHORIZED MODIFICATIONS SHOULD BE PERFORMED ONLY BY QUALIFIED SERVICE PERSONNEL TO MAINTAIN YOUR WARRANTY AND TO AVOID CREATING SAFETY HAZARDS. WE CANNOT ASSUME RESPONSIBILITY FOR ANY CONDITIONS AFFECTING THE PROPER OPERATION OF THIS EQUIPMENT WHICH MAY RESULT FROM UNAUTHORIZED REPAIR OR MODIFICATION.

NOTE ON REPLACEMENT PARTS

Some parts used in your equipment may be different than those which appear in the Parts List of this manual. This sometimes occurs due to difficulty in parts procurement, but does not alter the function of the equipment. Order the part listed in the Parts List.

NOTE: ALSO SEE PAGE 2.

LIST OF AVAILABLE MODIFICATION KITS

ITEM	DESCRIPTION AND PURPOSE	PART NO.
1	IICS Corner Bracket Reinforcement Kit. Reinforces rear corner panel mounting bracket to reduce possibility of breakage	78 930 70
2	Power Module PCB1 Modification Kit. Modifies PCB1 in Series 00 Power Modules to provide adjustments and tighten tolerances.	78 930 72
3	Remote Alarm Retrofit Kit. Provides Controllers Models CM78-1 Series 02 and lower and CM78-2 Series 00 with ability to accept Remote Alarm Model AM78-1.	78 211 70
4	Audio Transducer Replacement Kit. Provides Controllers, Models CM78-1 Series 03 and lower; CM78-2 Series 01 and lower with a new type of audio transducer.	68 903 88

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TABLE OF DEFINITIONS AND SYMBOLS

NOTE, IMPORTANT, CAUTION, AND WARNING

NOTE: A Note is inserted in text to point out procedures or conditions which may otherwise be misinterpreted or overlooked. A Note may also be used to clarify apparently contradictory or confusing situations.

IMPORTANT: Similar to a Note but used where greater emphasis is required.

CAUTION: A Caution is inserted in text to call attention to a procedure which, if not followed exactly, can lead to damage or destruction of the equipment.

WARNING: A Warning is inserted in text to call attention to dangerous or hazardous conditions inherent to the operation, cleaning, and maintenance of the equipment which may result in personal injury or death of the operator or patient.

SECTION 1

GENERAL INFORMATION

1.1 INTRODUCTION

This manual provides instructions for installation, maintenance, and repair of the following equipment:

- Infant Intensive Care System 7810
- Free Standing Infant Warmer System 7830
- Wall Mounted Infant Intensive Care System 7820
- Wall Mounted Infant Warmer System 7840

The manual is intended for use only by trained, qualified, service personnel. Instructions for the operator of the equipment are provided in a separate Operator's manual.

1.2 DESCRIPTION

1.2.1 INFANT INTENSIVE CARE SYSTEM

The Infant Intensive Care System (Figure 1.1) consists of a Cart and Bassinet Assembly, a Warmer Module, with a built-in Examination Light, and a Controller Assembly. The basic unit is also equipped with two removable instrument trays which are mounted on the Bassinet Support at the rear of the Bassinet.

- Cart and Bassinet – The Bassinet provides maximum visibility and access to the infant; the Cart provides a mounting for the Warmer Module and Bassinet.
- Warmer Module – The Warmer Module houses a heating element and an Examination Light for examination or special procedures.
- Controller – Provides either manual heat control or automatic skin temperature control.

1.2.2 FREE STANDING INFANT WARMER

The Free Standing Infant Warmer (Figure 1.2) is functionally identical to the Infant Intensive Care System except that it is not equipped with a Cart and Bassinet Assembly and the Warmer Module is fixed and cannot be swiveled from side to side. The mobile base is designed for use with a variety of "bassinets." The overall height of the base is only 9 cm (3-1/2 inches) and the base has a single center support leg to make it adaptable to the various styles of "bassinets." The Warmer Post can be assembled to provide one of three height positions to accommodate bassinets which have different mattress-to-floor heights while maintaining the specified distance between the lower surface of the Warmer Module and the mattress surface.

- Warmer Module – The Warmer Module houses a heating element and an Examination Light for examination or special procedures.
- Controller – Provides either manual heat control or automatic skin temperature control.

1.2.3 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

The Wall Mounted Infant Intensive Care System is functionally identical to the Infant Intensive Care System (Figure 1.1) except that it is not equipped with a Cart Assembly and is designed for mounting in a fixed position on a wall.

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- Bassinet – The Bassinet provides maximum visibility and access to the infant.
- Warmer Module – The Warmer Module houses a heating element and an Examination Light for examination or special procedures.
- Controller – Provides either manual heat control or automatic skin temperature control.

1.2.4 WALL MOUNTED INFANT WARMER

The Wall Mounted Infant Warmer is functionally identical to the Infant Intensive Care System (Figure 1.1) except that it is not equipped with a Cart/Bassinet Assembly and is designed for mounting in a fixed position on a wall.

- Warmer Module – The Warmer Module houses a heating element and an Examination Light for examination or special procedures.
- Controller – Provides either manual heat control or automatic skin temperature control.

1.3 ACCESSORIES

The accessories available for use with the Infant Intensive Care System and Wall Mounted Infant Intensive Care System are listed below and shown in Figure 1.1. Refer to Section 6 for part numbers.

- Drawer Module Package
- I.V. Pole Package
- *Cart Shelf Package
- Monitor Shelf Package
- Oxygen Delivery System Package
- **Oxygen Delivery System with Auxiliary Oxygen Tank Provision Package
- Direct Magnification Radiography (DMR) Cassette Holder Package
- Twin-O-Vac™ Oxygen Suction Unit
- Flowmeter
- Phototherapy System (Not Shown)
- Phototherapy Rack (Not Shown)
- A.C. Receptacle Box Assembly (Not Shown)
- Remote Alarm, Model AM78-1

* Infant Intensive Care System only

** 220 VAC Infant Intensive Care System only

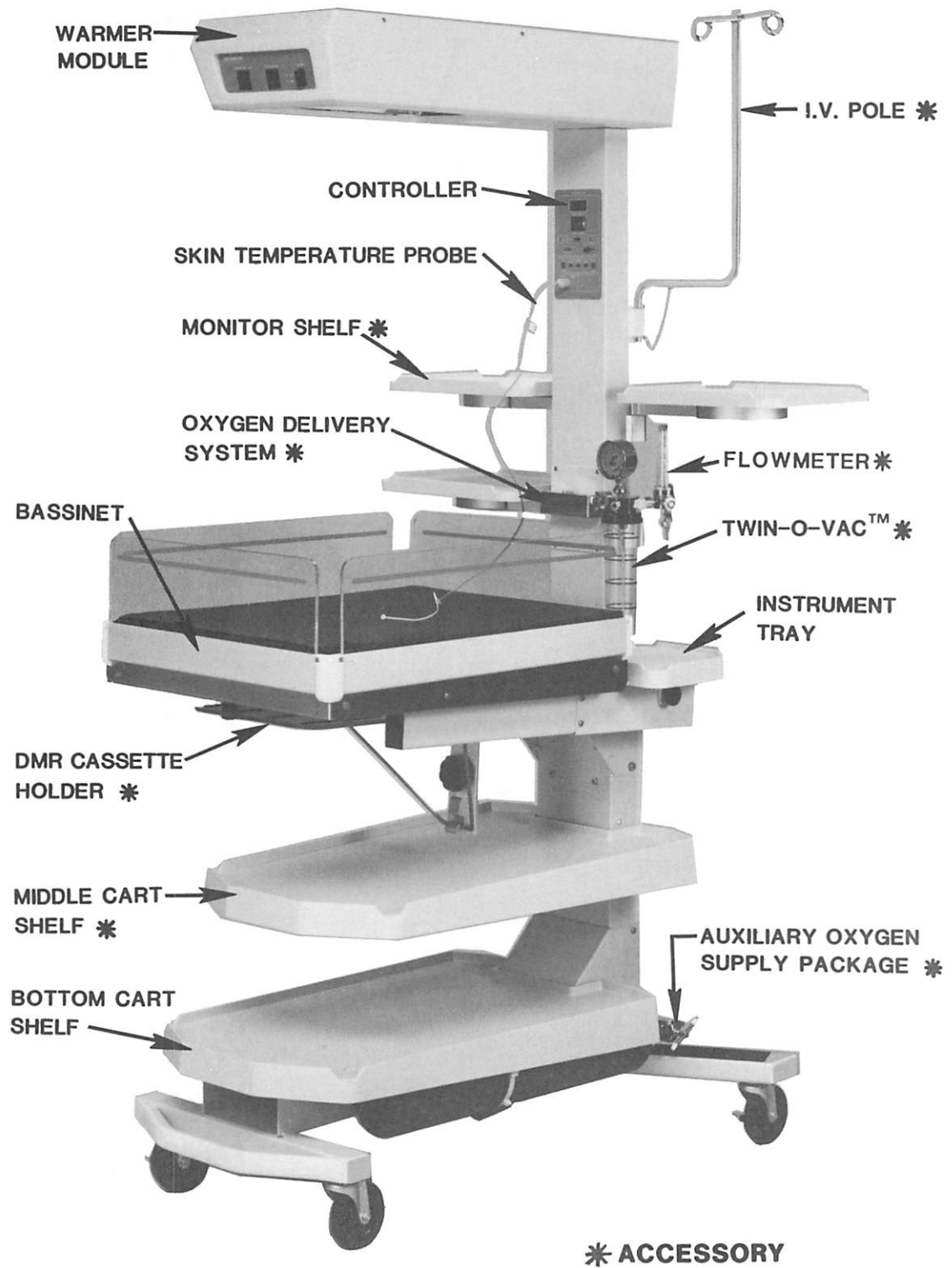


FIGURE 1.1 EQUIPMENT PROVIDED AND ACCESSORIES – INFANT INTENSIVE CARE SYSTEM

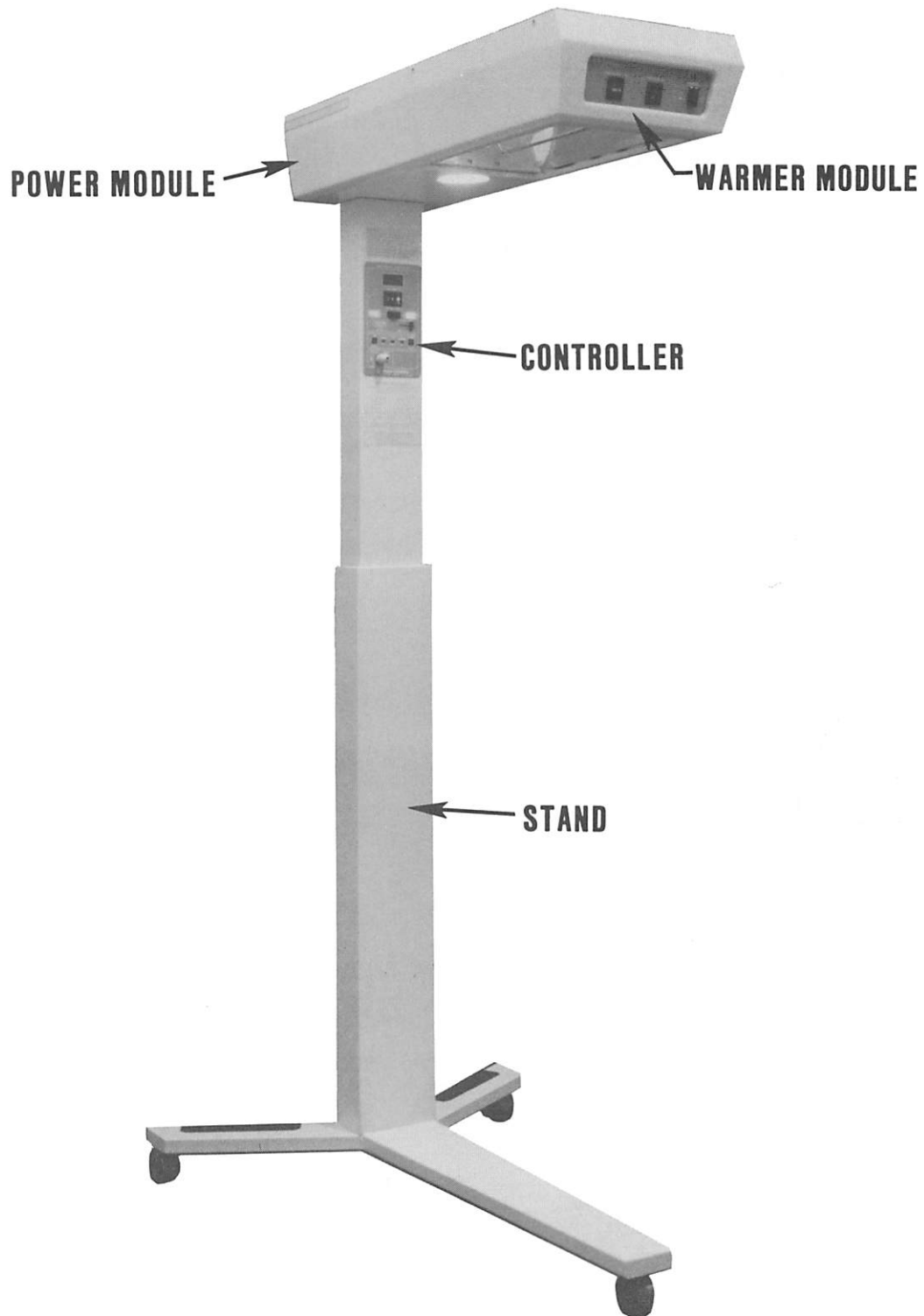


**FIGURE 1.2 EQUIPMENT PROVIDED AND ACCESSORIES – FREE STANDING
INFANT WARMER**

RESUSCITATION PACKAGE (Includes):

- Flowmeter without O₂ Take-Off
- Twin-O-Vac™ Pediatric Suction Unit
- Resuscitation Module
- Air Delivery System, Yoke and Gauge
- O₂ Delivery System, Yoke and Gauge
- O₂/Air Tank Mounting Bracket

The accessories available for use with the Free Standing and Wall Mounted Infant Warmers are listed below. Refer to Section 6 for part numbers.

- Phototherapy System (not shown)
- Phototherapy Rack (not shown)

1.4 MODEL IDENTIFICATION/SERIES CHANGE

1.4.1 INFANT INTENSIVE CARE SYSTEM AND WALL MOUNTED INFANT WARMER

The Air-Shields® Infant Intensive Care System has four data tags which list model identification and series number; the Wall Mounted Infant Warmer has three data tags. The locations of the data tags are as follows:

1. ***CART/BASSINET:** Located inside of main base channel; relates only to the Cart/Bassinet.
2. **WARMER MODULE:** Located inside of Power Module well; relates only to the Warmer Module; relates only to the Warmer Module.
3. **POWER MODULE:** Located on front panel of Power Module; relates only to the Power Module.
4. **CONTROLLER:** Located on side of Controller; relates only to the Controller.

The following example explains the content of the data tag:

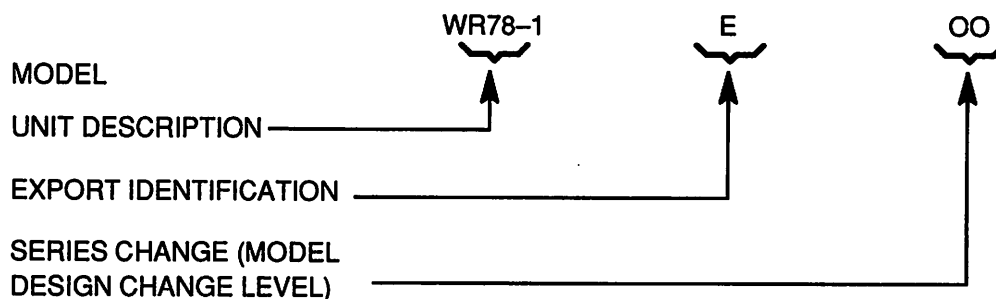


***TABLE 1.1 SERIES CHANGE – CART/BASSINET, MODEL CB78-1**

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None

*Infant Intensive Care System only.

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TABLE 1.2 SERIES CHANGE – WARMER MODULE, MODEL WR78–1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Added Components to Reinforce Pivot Bracket.	Pivot Bracket Assembly 78 265 25.
02	Changed Pivot Bracket Assembly.	Replaced Pivot Bracket Assembly 78 265 25 with 78 265 28.

TABLE 1.3 SERIES CHANGE – POWER MODULE, MODEL PM78–1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Revise Power Module Assembly to allow interchanging of Controllers without need for recalibration of Controller.	Power Board PCB1 changed from 68 320 70 to 68 320 71. Changed VR1, VR2 and VR3 on Power Chassis.

TABLE 1.4 SERIES CHANGE – CONTROLLER, MODEL CM78–1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Revise Controller Module Assembly. Add circuitry to prevent maximum heater power and enable alarms if SKIN/MANUAL switch (S1) malfunctions.	Circuit Boards PCB2 (78 316 70) and PCB3 (78 317 70).
02	Revise Controller Module Assembly. Add circuitry to activate audible alarm upon failure of SILENCE/RESET switch (S3) function.	Circuit Board PCB2 (78 316 70).

TABLE 1.4 SERIES CHANGE – CONTROLLER, MODEL CM78-1 (continued)

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
03	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.

TABLE 1.5 SERIES CHANGE – CONTROLLER, MODEL CM78-2

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design.	None.
01	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.
02	Add Speaker to Motherboard Assembly.	PCB4 changed from 78 318 71 to 78 318 72.

1.4.2 FREE STANDING INFANT WARMER

The Air-Shields® Free Standing Infant Warmer has three data tags which list model identification and series number. The locations of the data tags are as follows:

1. **WARMER MODULE:** Located inside of Power Module well; relates only to the Warmer Module.
2. **POWER MODULE:** Located on front panel of Power Module; relates only to the Power Module.
3. **CONTROLLER:** Located on side of Controller; relates only to the Controller.

TABLE 1.6 SERIES CHANGE – WARMER MODULE, MODEL WFS78-1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Added components to reinforce Mounting Bracket Assembly.	Mounting Bracket Assembly 78 270 15.
02	Changed Mounting Bracket Assembly.	Replaced Mounting Bracket Assembly 78 270 15 with 78 270 17.

TABLE 1.7 SERIES CHANGE – POWER MODULE, MODEL PM78-1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Revise Power Module Assembly to allow interchanging of Controller without need for recalibration of Controller.	Power Board PCB1 changed from 68 320 70 to 68 320 71. Changed VR1, VR2 and VR3 on Power Chassis.

TABLE 1.8 SERIES CHANGE – CONTROLLER, MODEL CM78-1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Revise Controller Module Assembly. Add circuitry to prevent maximum heater power and enable alarms if SKIN/MANUAL switch (S1) malfunctions.	Circuit Boards PCB2 (78 316 70) and PCB3 (78 317 70).
02	Revise Controller Module Assembly. Add circuitry to activate audible alarm upon failure of SILENCE/RESET switch (S3) function.	Circuit Board PCB2 (78 316 70).
03	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.

TABLE 1.9 SERIES CHANGE – CONTROLLER, MODEL CM78-2

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.
02	Add Speaker to Motherboard Assembly.	PCB4 changed from 78 318 71 to 78 318 72.

1.4.3 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

The Air-Shields® Wall Mounted Infant Intensive Care System has three data tags which list model identification and series numbers. The location of the data tags are as follows:

1. **WARMER MODULE:** Located inside of Power Module well; relates only to the Warmer Module.
2. **POWER MODULE:** Located on front panel of Power Module; relates only to the Power Module.
3. **CONTROLLER:** Located on side of Controller; relates only to the Controller.

TABLE 1.10 SERIES CHANGE – WARMER MODULE, MODEL WR78–1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design.	None.
01	Added components to reinforce Pivot Bracket.	Pivot Bracket Assembly 78 265 25.
02	Changed Pivot Bracket Assembly.	Replaced Pivot Bracket Assembly 78 265 25 with 78 265 28.

TABLE 1.11 SERIES CHANGE – POWER MODULE, MODEL PM78–1 and 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design.	None.
01	Revise Power Module Assembly to allow interchanging of Controllers without need for recalibration of Controller.	Power Board PCB1 changed from 68 320 70 to 68 320 71. Changed VR1, VR2 and VR3 on Power Chassis.

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TABLE 1.12 SERIES CHANGE – CONTROLLER, MODEL CM78-1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design.	None.
01	Revise Controller Module Assembly. Add circuitry to prevent maximum heater power and enable alarms if SKIN/MANUAL switch (S1) malfunctions.	Circuit Boards PCB2 (78 316 70) and PCB3 (78 317 70).
02	Revise Controller Module Assembly. Add circuitry to activate audible alarm upon failure of SILENCE/RESET switch (S3) function.	Circuit Board PCB2 (78 316 70).
03	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.

TABLE 1.13 SERIES CHANGE – CONTROLLER MODULE, MODEL CM78-2

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design.	None.
01	Revise Controller Module Assembly. Add circuitry to accommodate Remote Alarm, Model AM78-1.	PCB4 changed from 78 318 70 to 78 318 71.
02	Add Speaker to Motherboard Assembly.	PCB4 changed from 78 318 71 to 78 318 72.

SECTION 2 INSTALLATION

2.1 UNPACKING

When removing the equipment from the cartons, use care not to scratch or otherwise damage unprotected surfaces; remove all packing materials.

2.1.1 INFANT INTENSIVE CARE SYSTEM

The Infant Intensive Care System is shipped in a single carton containing the following assemblies which are packaged separately:

- Warmer Module Assembly
- Bassinet Assembly
- Warmer Module Post Assembly
- Cart and Bassinet Support Assemblies
- Cart Shelf Assembly
- Controller Assembly and Power Module

2.1.2 FREE STANDING INFANT WARMER

The Free Standing Infant Warmer is shipped in a single carton containing the following assemblies which are packaged separately:

- Warmer Module Assembly
- Upper and Lower Mounting Posts
- Base Assembly
- Controller Assembly and Power Module

2.1.3 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

The Wall Mounted Infant Intensive Care System is shipped in a single carton containing the following assemblies which are packaged separately:

- Warmer Module Assembly
- Bassinet Assembly
- Mounting Post
- Mounting Bracket
- Bassinet Support Assembly
- Controller Assembly and Power Module

2.1.4 WALL MOUNTED INFANT WARMER

The Wall Mounted Infant Warmer is shipped in a single carton containing the following assemblies which are packaged separately:

- Warmer Module Assembly
- Mounting Post
- Mounting Bracket
- Controller Assembly and Power Module

2.2 ASSEMBLY – INFANT INTENSIVE CARE SYSTEM

This paragraph provides instructions for assembling the Infant Intensive Care System; no special tools are required.

It should be noted that the overall height of the fully assembled Infant Intensive Care System and the height of the Bassinet at mattress level are determined by the position of the Bassinet Support Assembly.

The Cart and the Bassinet Support Assemblies are shipped preassembled, with the Bassinet Support installed in the "high" position. This provides a maximum overall unit height of 77 inches (195.6 cm) when the unit is fully assembled; the height of the Bassinet, at mattress level, will be 39 inches (93 cm) from the floor.

If your requirements dictate, the overall height of the Infant Intensive Care System may be lowered to 74 3/4 inches (189.9 cm) by installing the Bassinet in the alternative "low" position. When installed in the "low" position, the height of the Bassinet, at mattress level, will be 36 3/4 inches (93 cm) from the floor.

Regardless of which position is selected (high or low), the distance between the mattress and the Warmer Module will remain constant when the Infant Intensive Care System is fully assembled.

2.2.1 INSTALLATION OF BASSINET SUPPORT IN THE ALTERNATIVE LOW POSITION

NOTE: If the position of the Bassinet Support as shipped ("high" position) satisfies your requirements, omit this procedure and proceed to paragraph 2.2.2.

1. **REMOVE THE FOUR #10–32 x 1 – 1/4" SCREWS (1)** (Figure 2.1) that secure the Instrument Tray Support Frame (2) to the Bassinet Support (3) and remove the support frame.
2. **LOOSEN THE SCREWS (12)** and remove the Rear Cart Cover (13) and the two corner trim angles.
3. **REMOVE THE TWO 5/16" – 18 SHOULDER SCREWS (4)** and 5/16" lock washers (5) and the two 5/16" – 18 x 5/8" screws (6) and 5/16" lock washers (7) that secure the Bassinet Support to the Cart Assembly (8).

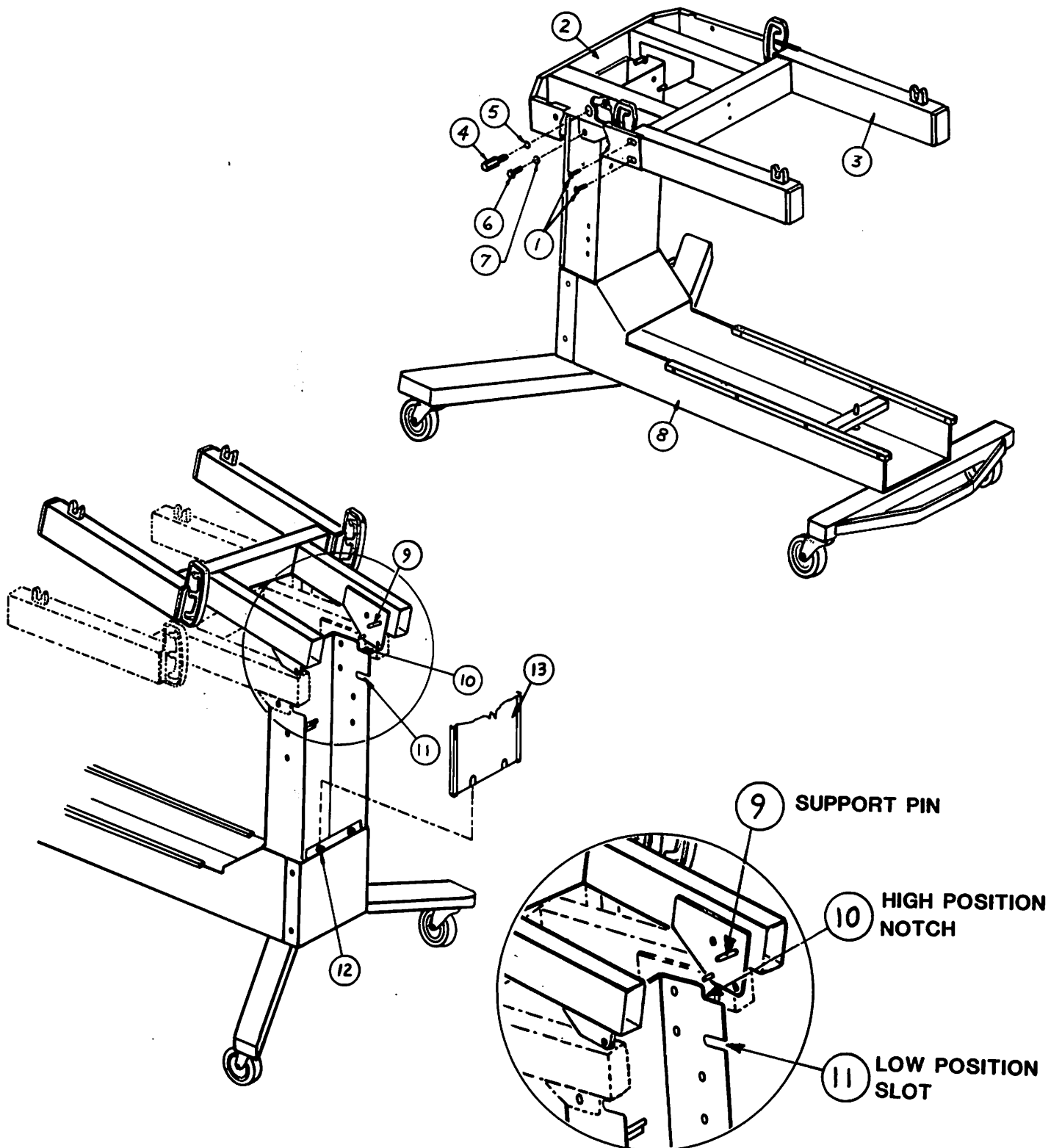


FIGURE 2.1 INSTALLATION OF BASSINET SUPPORT IN LOW POSITION

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4. **RAISE AND SUPPORT THE FRONT END OF THE BASSINET SUPPORT** and slowly push the Bassinet Support toward the rear of the cart until the support pins (9) are disengaged from the high position mounting notches (10).
5. **LOWER THE BASSINET SUPPORT** and engage the support pins in the low position mounting slots (11).
6. **LOWER THE FRONT END OF THE BASSINET SUPPORT** and pull forward to fully engage the support pins.
7. **REASSEMBLE** by reversing steps 1, 2, and 3.

2.2.2 INSTALLATION OF MOUNTING POST

NOTE: If the Monitor Shelf Package (78 165 70) and/or I.V. Pole Package (78 166 70) accessories were ordered with the equipment, install the mounting brackets for these accessories on the Mounting Post before installing the post. (See instructions supplied with the accessories.) If the mounting brackets have been factory installed, disregard this notice.

To install the Mounting Post on the Cart Assembly, refer to Figure 2.2 and proceed as follows:

IMPORTANT: If the Bassinet Support is installed in the "high" position (as shipped), install the Mounting Post in the "high" position as described in step 1. If the Bassinet Support is installed in the alternative "low" position (paragraph 2.2.1), install the Mounting Post in the "low" position as described in step 2.

1. **INSTALL THE MOUNTING POST IN THE HIGH POSITION** as follows:
 - A. Loosen the four #10–32 x 1–1/4" screws (1) that secure the Instrument Tray Support Frame (2) to the Bassinet Support (3) and slide the support frame back as far as it will go.
 - B. Insert the bottom end of the Mounting Post (4) into the opening at the top of the vertical section (5) of the Cart Assembly.
 - C. Slowly lower the Mounting Post until the bottom edge of the post is firmly seated in the mounting tab (6) on the inside front surface of the vertical section of the Cart Assembly.
 - D. Adjust the position of the Mounting Post until the support pin (7) in the Bassinet Support is inserted in the slotted hole (8) in the Mounting Post.
 - E. Align the four mounting holes (9) in the post with the four mounting holes in the Cart and secure in place by installing the four 1/4"–20 x 1/2" screws (10) and 1/4" lock washers (11) supplied; tighten securely.
 - F. Install the Post Handle (13) using the 1/4–20 x 1.75" screws (15), the 1/4" lock washers (16) and the four flat washers (14). Make sure the flat washers are between the Post and the Handle.
 - G. Slide the Instrument Tray Support Frame (2) forward until it is against the Mounting Post and tighten the four screws.

NOTE: The plastic trim strip on the back of the Mounting Post should rest on top of the support frame.

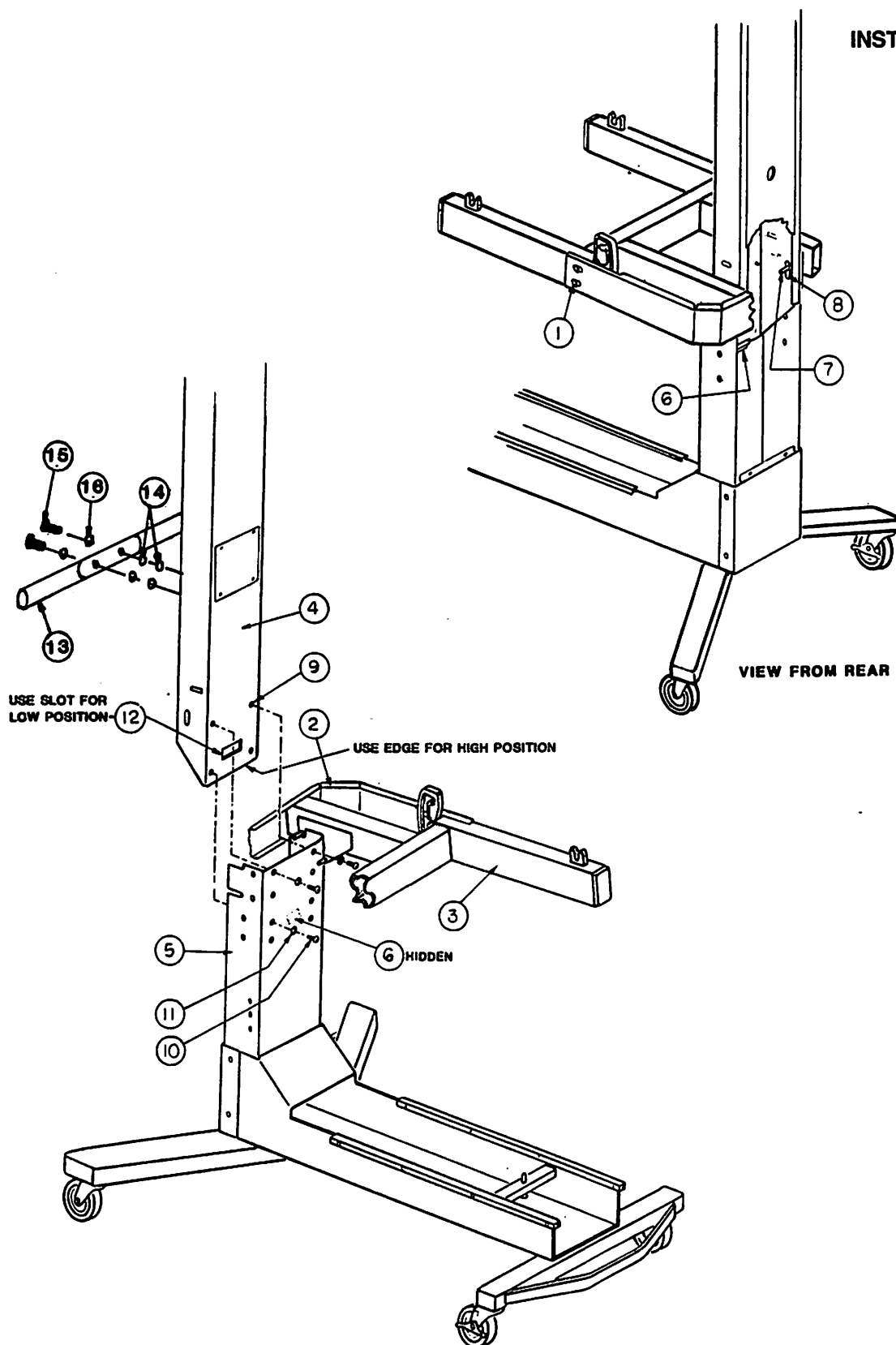


FIGURE 2.2 INSTALLATION OF MOUNTING POST

IICS INSTALLATION

2. INSTALL THE MOUNTING POST IN THE LOW POSITION as follows:

- A. Loosen the four #10–32 x 1–1/4" screws (1) that secure the Instrument Tray Support Frame (2) to the Bassinet Support (3) and slide the support frame back.
- B. Insert the bottom end of the Mounting Post (4) into the opening at the top of the vertical section (5) of the Cart Assembly.
- C. Slowly lower the Mounting Post until the upper edge of the low position mounting slot (12) is firmly seated in the mounting tab (6) on the inside front surface of the vertical section of the Cart Assembly.
- D. Adjust the position of the Mounting Post until the support pin (7) on the Bassinet Support is inserted in the slotted hole (8) in the Mounting Post.
- E. Align the four mounting holes (9) in the post with the four mounting holes in the Cart and secure in place by installing the four 1/4" – 20 x 1/2" screws (10) and 1/4" lock washers (11) supplied; tighten securely.
- F. Install the Post Handle (13) using the 1/4–20 x 1.75" screws (15), the 1/4" lock washers (16) and the four flat washers (14). Make sure the flat washers are between the Post and the Handle.
- G. Slide the Instrument Tray Support Frame (2) forward until it is against the Mounting Post and tighten the four screws.

NOTE: The plastic trim strip on the back of the Mounting Post should rest on top of the support frame.

2.2.3 INSTALLATION OF POWER MODULE

NOTE: If the Power Module has not been installed in the Warmer Module, it will be necessary to install the Power Module before performing the Warmer Module installation procedure given in paragraph 2.2.4 of this manual. If the Power Module has been factory installed, disregard this procedure.

1. **REFER TO Figure 2.3.** Position the Power Module (1) in the Warmer Module (2) as shown, and connect the interconnecting ribbon cable (3) to the connector (4). Make sure that the key on the plug is inserted into the slot on the connector and is firmly seated.
2. **CAREFULLY SLIDE THE POWER MODULE** into the Warmer Module until the plug on the rear of the module mates with the connector on the Warmer Module and is firmly seated.

CAUTION: Use care to prevent damage to the interconnecting ribbon cable when installing the Power Module.

3. **INSTALL THE TWO MOUNTING SCREWS (5)** and flat washers (6); tighten securely.

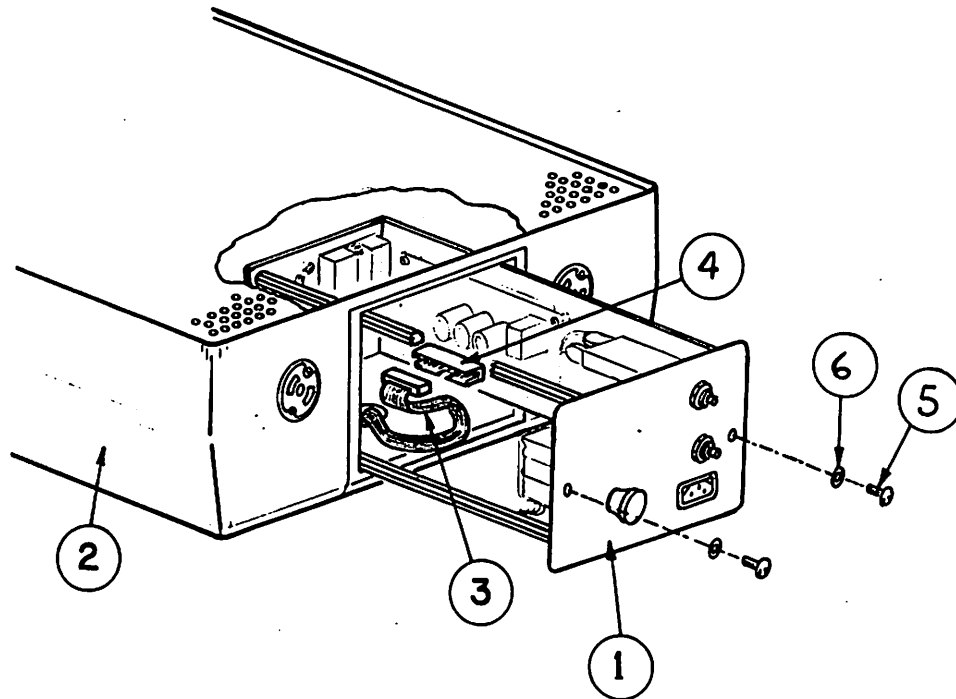


FIGURE 2.3 INSTALLATION OF POWER MODULE

2.2.4 INSTALLATION OF WARMER MODULE AND CONTROLLER

To install the Warmer Module on the Mounting Post, refer to Figure 2.4 and proceed as follows:

1. **LOOSELY THREAD TWO #10–32 x 5/8 SCREWS (1)** and #10 lock washers (2) supplied into the two topmost holes in the Warmer Module mounting bracket (3).
2. **RAISE THE WARMER MODULE (4)** above the open end of the Mounting Post (5) and insert the interconnecting ribbon cable (6) into the open end of the post.

CAUTION: Use care to prevent damage to the interconnecting ribbon cable when installing the Warmer Module.

3. **SLOWLY LOWER THE WARMER MODULE MOUNTING BRACKET** into the open end of the Mounting Post until the screws (1) installed in step 1 are firmly seated in the two mounting slots (7) at the top of the post.

IMPORTANT: Make sure that the lock washers (2) are directly under the screw heads and are between the screw heads and the outer surface of the Mounting Post.

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INSTALLATION

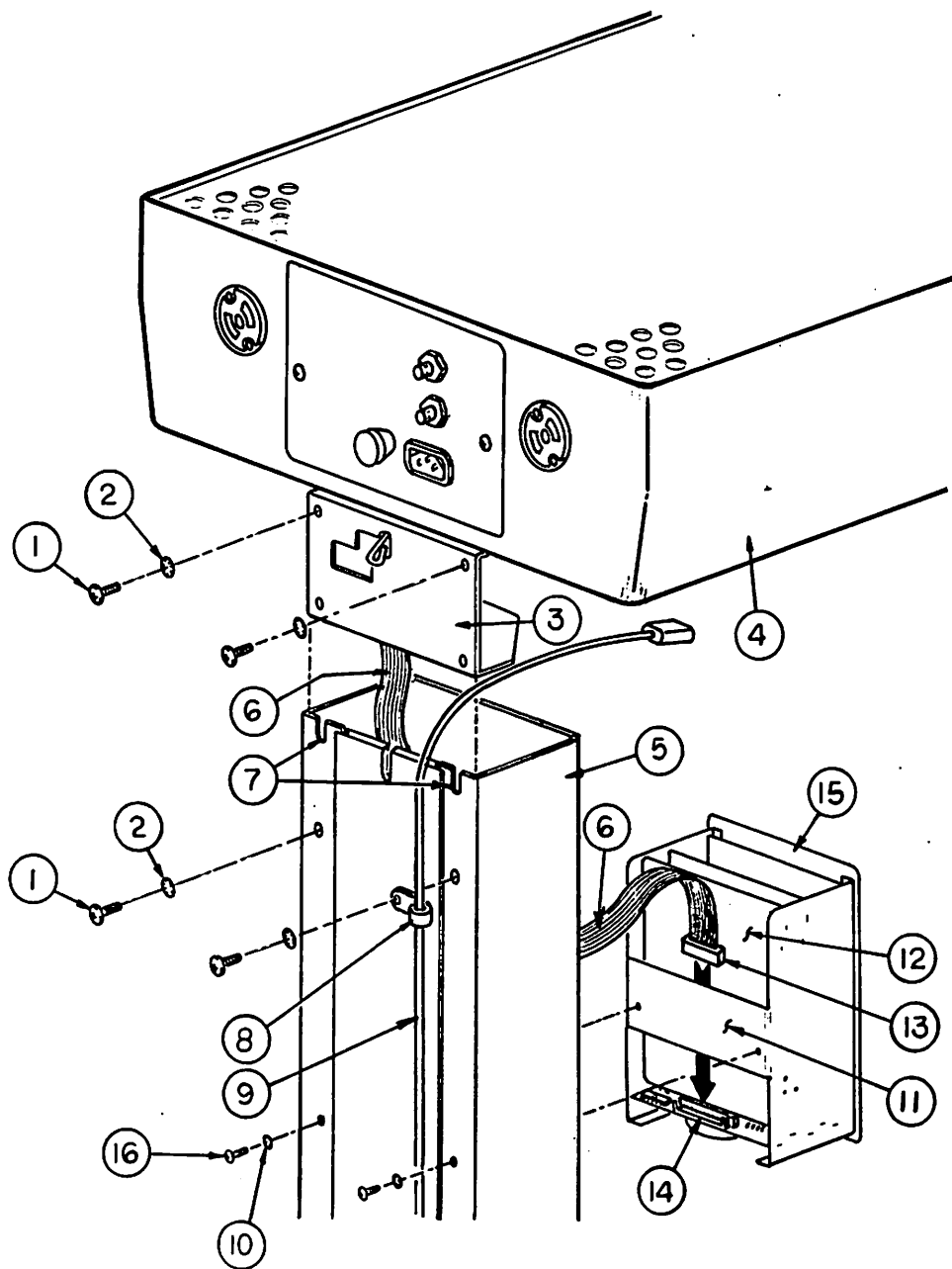


FIGURE 2.4 INSTALLATION OF WARMER MODULE AND CONTROLLER

4. **INSTALL THE POWER CORD CLAMP (8)** on the Power Cord (9); position the clamp (11) inches from the end of the Power Cord.
5. **SECURE THE POWER CORD CLAMP AND POWER CORD** to the Mounting Post when installing the two lowermost Warmer Module mounting screws (1) as shown in Figure 2.4. Tighten all mounting screws securely.

NOTE: Raise the front of the Warmer Module slightly when tightening the topmost mounting screws. This will relieve the pressure on the screws and ease the tightening procedure.

6. **CAREFULLY THREAD THE INTERCONNECTING CABLE (6)** out through the Controller opening at the front of the Warmer Module mounting post.

CAUTION:

- When connecting the interconnecting cable to the Controller, make sure that the cable is not twisted or crimped.
 - Make sure that the interconnecting cable is dressed down between the circuit board and the back cross-member of the Controller chassis.
 - When connecting the interconnecting cable to the Controller, make sure that the key on the cable plug is inserted into the slot on the connector.
7. **CAREFULLY THREAD THE INTERCONNECTING CABLE (6)** down between the back cross-member (11) and the circuit board (12) on the Controller and connect the cable plug (13) to the connector (14). Make sure that the key on the plug is inserted into the slot on the connector and is firmly seated.

CAUTION: When installing the Controller in the Mounting Post, use care not to twist, crimp, pinch, or otherwise damage the interconnecting cable.

8. **CAREFULLY DRESS THE INTERCONNECTING CABLE** back into the opening in the Mounting Post, insert the Controller (15) into the opening, and install the Controller mounting screws (16) and lock washers (10).

2.2.5 INSTALLATION OF BASSINET

To install the Bassinet on the Bassinet Support, refer to Figure 2.5 and proceed as follows:

1. **REMOVE THE MATTRESS AND THE X-RAY TRAY** from the Bassinet.
2. **LIFT THE BASSINET FRAME ASSEMBLY (1)** and, standing at the front of the Cart Assembly, insert the left-hand end of the Bassinet Elevator Rod (2) into the corresponding Tilt Adjusting Bracket (3), then insert the right-hand end of the rod into the right-hand Tilt Adjusting Bracket.
3. **LOWER THE FRONT OF THE BASSINET FRAME ASSEMBLY** until the two Pivot Release Mechanisms (4) are in place over the Pivot Blocks (5) on the Bassinet Support (6).
4. **ACTUATE THE PIVOT RELEASE MECHANISMS (Detail A)** to allow the Bassinet Frame Assembly to seat in the Pivot Blocks; it may be necessary to gently move the frame back and forth to seat the frame in the pivot blocks. Release the Pivot Release Mechanisms to lock the frame in place.

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5. **REINSTALL THE X-RAY TRAY AND THE MATTRESS** on the Bassinet Frame Assembly.
6. **INSTALL THE SIDE AND END PANELS** on the Bassinet.

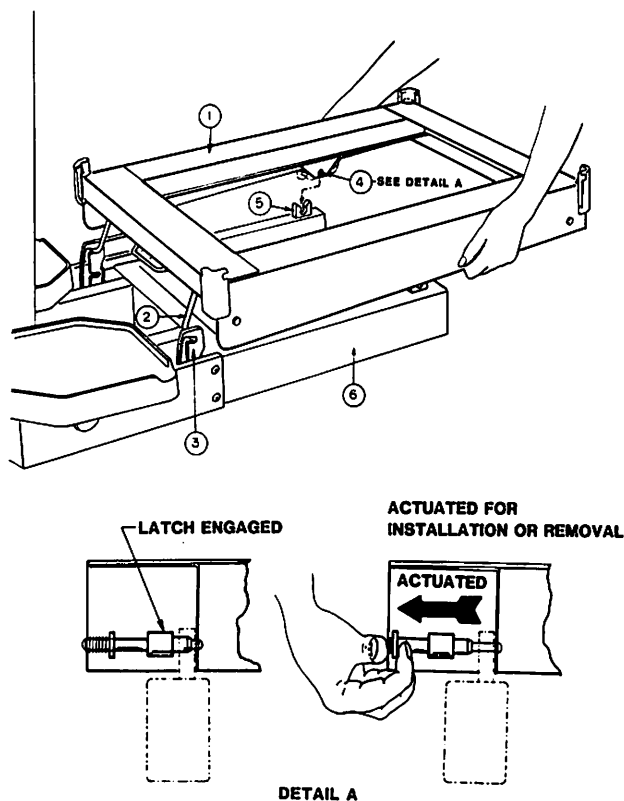


FIGURE 2.5 INSTALLATION OF BASSINET

2.2.6 INSTALLATION OF CART SHELF AND INSTRUMENT TRAYS

To install the Cart Shelf and Instrument Trays, refer to Figure 2.6 and proceed as follows:

1. **ALIGN THE TRACKING GROOVES IN THE CART SHELF (1)** with the tracks (2) on the Cart and slide the Shelf toward the rear of the Cart until the latching pin engages the locking groove in the underside of the shelf. Check that the shelf is positively locked.
2. **LOOSELY THREAD THE TWO RETAINING KNOBS (4)** into the Instrument Tray Support Frame (5).
3. **INSERT THE LOCKING TONGUE (6) ON THE INSTRUMENT TRAY (7)** into the slot (8) on the Mounting Post, slip the mounting bracket on the tray over the retaining knob and tighten the knob securely.

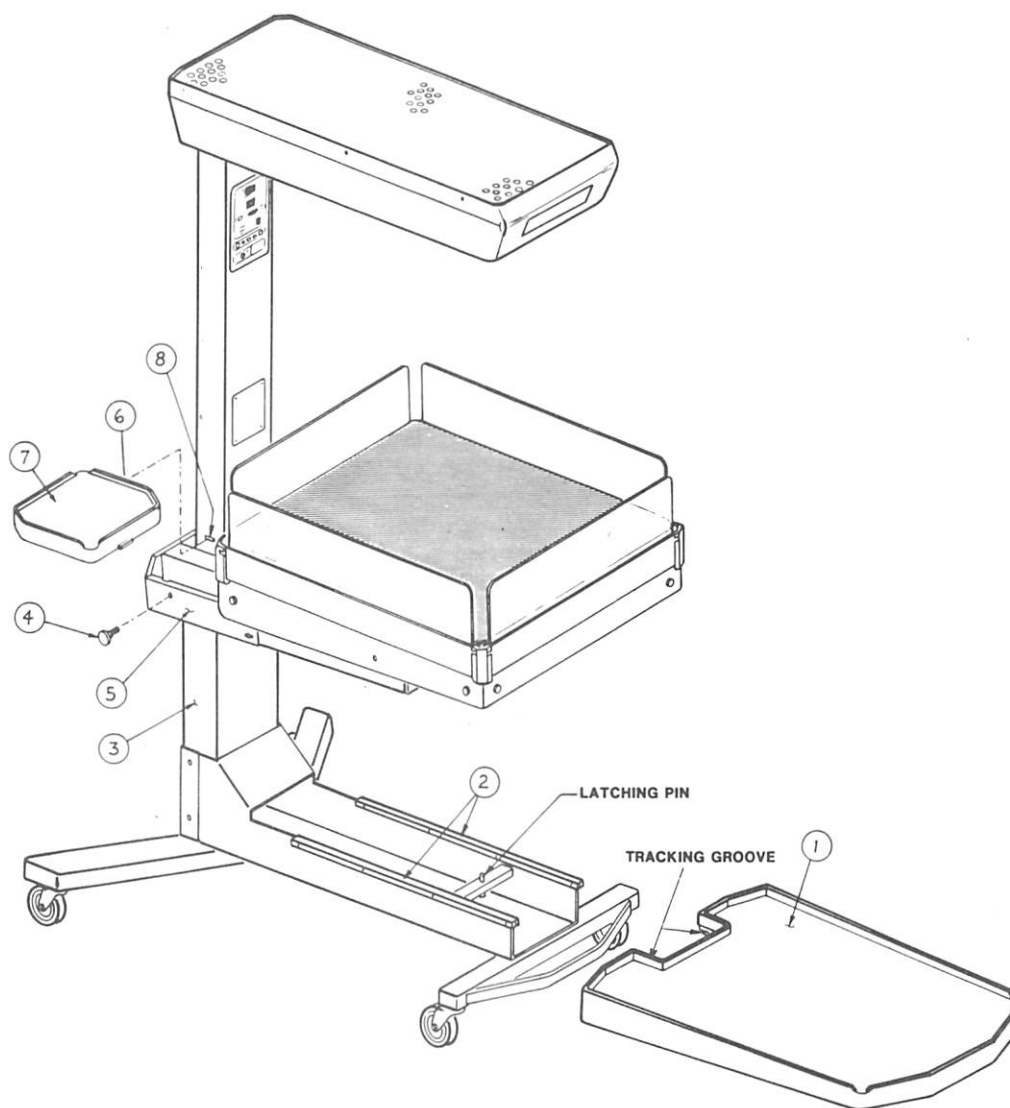


FIGURE 2.6 INSTALLATION OF CART SHELF AND INSTRUMENT TRAYS

2.3 ASSEMBLY – FREE STANDING INFANT WARMER

Instructions for assembling the Free Standing Infant Warmer are provided below; no special tools are required.

It should be noted that the Warmer Post can be assembled to provide one of three height positions to accommodate bassinets which have different mattress-to-floor heights while maintaining the specified distance between the lower surface of the Warmer Module and the mattress surface.

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2.3.1 ASSEMBLY OF UPPER AND LOWER MOUNTING POSTS AND BASE ASSEMBLY

1. **REFER TO FIGURE 2.7** and mount the Lower Mounting Post on the Base Assembly using the four mounting bolts and lock washers supplied.

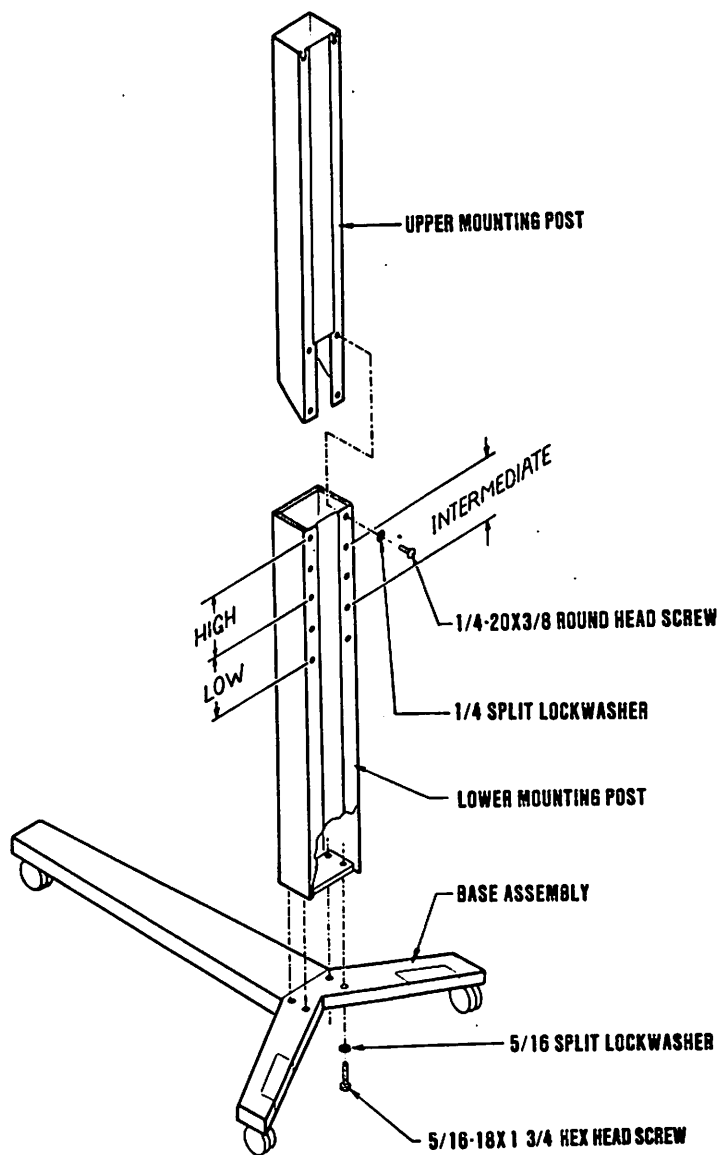
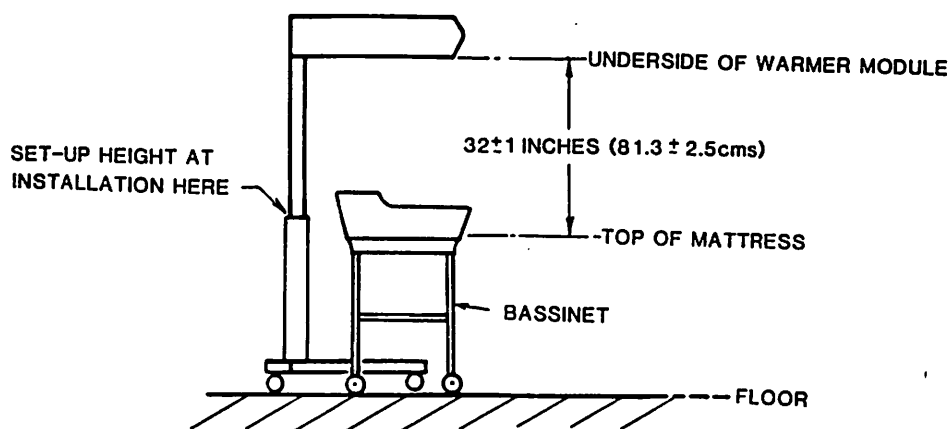


FIGURE 2.7 ASSEMBLY OF UPPER AND LOWER MOUNTING POSTS AND BASE ASSEMBLY

IMPORTANT:

- The Air-Shields® Free-Standing Infant Warmer can be used with a variety of bassinets which could have different mattress-to-floor heights (infant-to-radiant source distances). It is imperative that the distance between underside of the warmer module and the top of the bassinet mattress be 32 ± 1 inches (81.3 ± 2.5 cm). To accommodate a variety of bassinet mattress heights, the Infant Warmer can be set-up in any of three available heights as determined by the position of the Upper Mounting Post.
 - Before installing the Upper Mounting Post (step 2), it is important to determine the mattress-to-floor height of the bassinet(s) in use. This dimension will be used to determine which position (High, Intermediate, or Low) should be selected when installing the Upper Mounting Post.
2. **REFER TO FIGURE 2.7** and mount the Upper Mounting Post on the Lower Mounting Post using the four mounting screws and lock washers supplied. Refer to the following chart to select the position for installation.

MATTRESS-TO-FLOOR HEIGHT	UPPER MOUNTING POST POSITION
32 to 34 inches (81 to 86.4 cm)	Install in LOW position.
35 to 37 inches (89 to 94 cm)	Install in INTERMEDIATE position.
38 to 40 inches (96.5 to 101.6 cm)	Install in HIGH position.



2.3.2 INSTALLATION OF POWER MODULE

NOTE: If the Power Module has not been installed in the Warmer Module, it will be necessary to install the Power Module before performing the Warmer Module installation procedure given in paragraph 2.3.3 of this manual. If the Power Module has been factory installed, disregard this procedure.

IICS INSTALLATION

1. **REFER TO FIGURE 2.8.** Position the Power Module (1) in the Warmer Module (2) as shown, and connect the interconnecting ribbon cable (3) to the connector (4). Make sure that the key on the plug is inserted into the slot on the connector and is firmly seated.

CAUTION: Use care to prevent damage to the interconnecting ribbon cable when installing the Power Module.

2. **CAREFULLY SLIDE THE POWER MODULE** into the Warmer Module until the plug on the rear of the module mates with the connector on the Warmer Module and is firmly seated.
3. **INSTALL THE TWO MOUNTING SCREWS (5) and flat washers (6);** tighten securely.

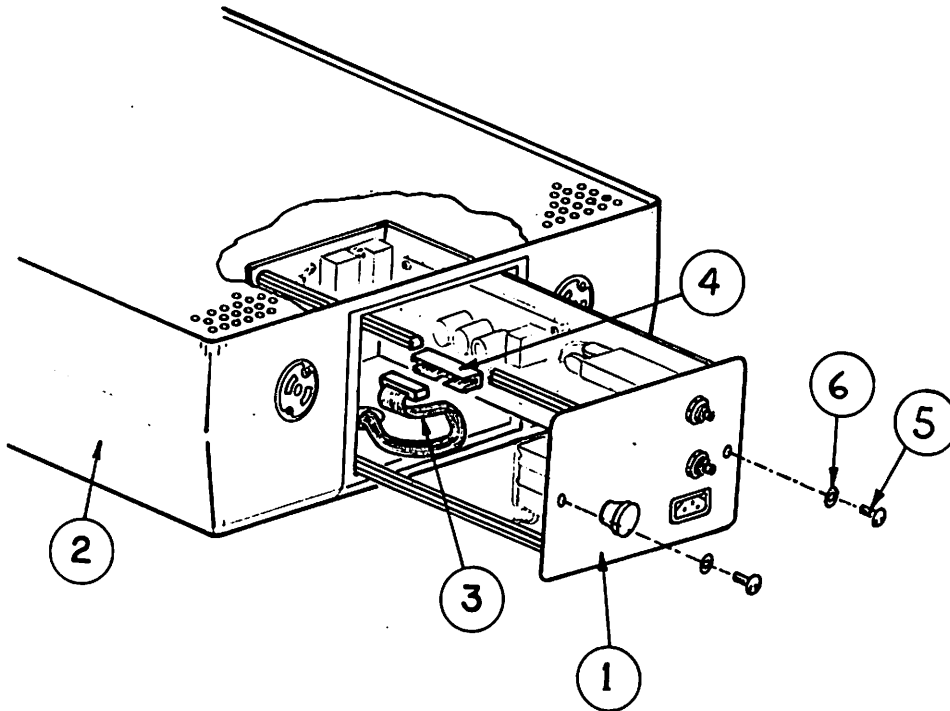


FIGURE 2.8 INSTALLATION OF POWER MODULE

2.3.3 INSTALLATION OF WARMER MODULE AND CONTROLLER

To install the Warmer Module on the Mounting Post, refer to Figure 2.9 and proceed as follows:

1. **LOOSELY THREAD TWO #10-32 x 5/8 SCREWS (1) and #10 lock washers (2)** supplied, into the two topmost holes in the Warmer Module mounting bracket (3).

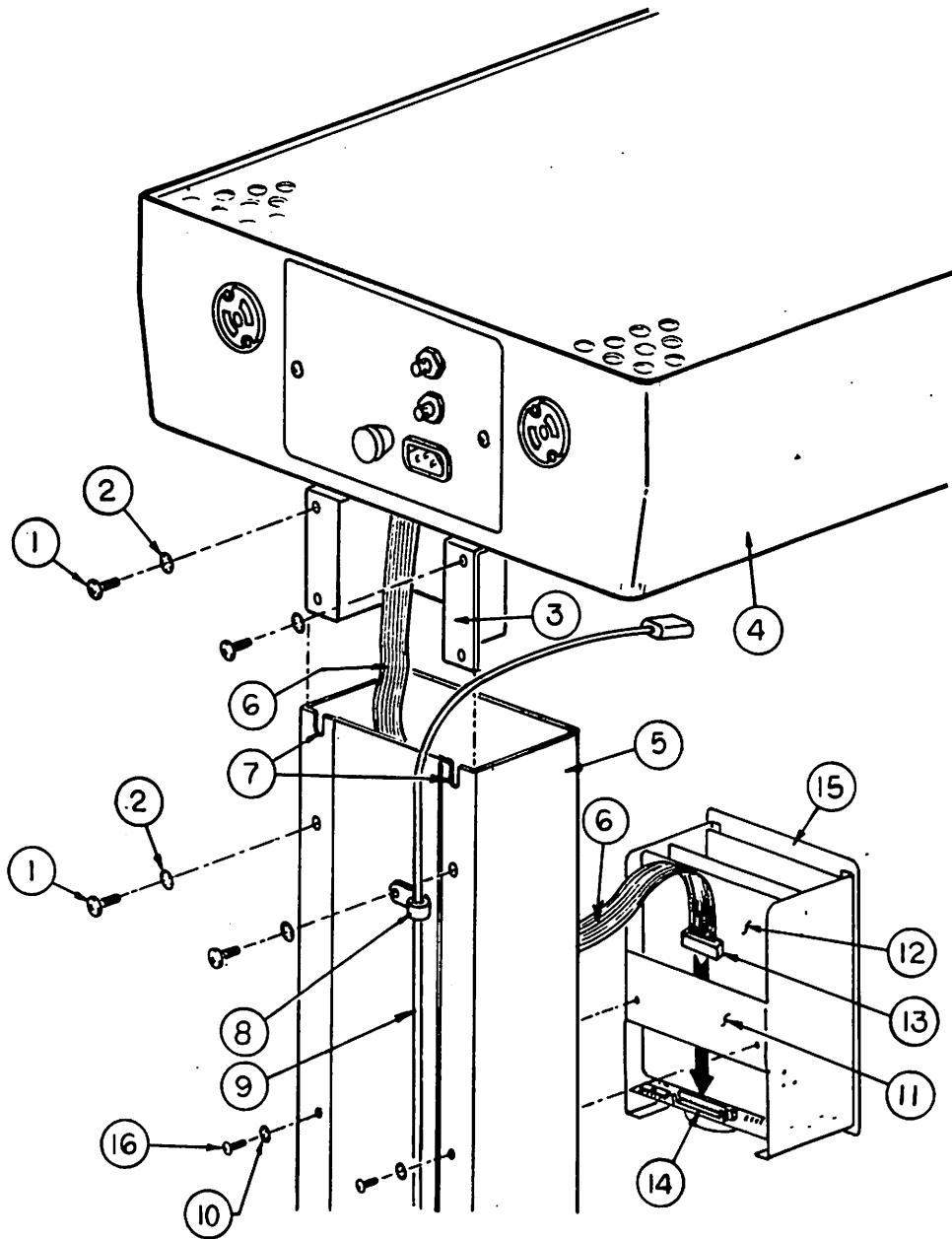


FIGURE 2.9 INSTALLATION OF WARMER MODULE AND CONTROLLER

IICS INSTALLATION

2. **RAISE THE WARMER MODULE (4)** above the open end of the Mounting Post (5) and insert the interconnecting ribbon cable (6) into the open end of the post.

CAUTION: Use care to prevent damage to the interconnecting ribbon cable when installing the Warmer Module.

3. **SLOWLY LOWER THE WARMER MODULE** mounting flange into the open end of the Mounting Post until the screws (1) installed in step 1 are firmly seated in the two mounting slots (7) at the top of the post.

IMPORTANT: Make sure that the lock washers (2) are directly under the screw heads and are between the screw heads and the outer surface of the Mounting Post.

4. **INSTALL THE POWER CORD CLAMP (8)** on the Power Cord (9); position the clamp 11 inches from the end of the Power Cord.
5. **SECURE THE POWER CORD CLAMP AND POWER CORD** to the Mounting Post when installing the two lowermost Warmer Module mounting screws (1) as shown in Figure 2.9. Tighten all mounting screws securely.

NOTE: Raise the front of the Warmer Module slightly when tightening the topmost mounting screws. This will relieve the pressure on the screws and ease the tightening procedure.

6. **CAREFULLY THREAD THE INTERCONNECTING CABLE (6)** out through the Controller opening at the front of the Warmer mounting post.

CAUTION:

- When connecting the interconnecting cable to the Controller, make sure that the cable is not twisted or crimped.
 - Make sure that the interconnecting cable is dressed down between the circuit board and the back cross-member of the Controller chassis.
 - When connecting the interconnecting cable to the Controller, make sure that the key on the cable plug is inserted into the slot on the connector.
7. **CAREFULLY THREAD THE INTERCONNECTING CABLE (6)** down between the back cross-member (11) and the circuit board (12) on the Controller and connect the cable plug (13) to the connector (14). Make sure that the key on the plug is inserted into the slot on the connector and is firmly seated.

CAUTION: When installing the Controller in the Mounting Post, use care not to twist, crimp, pinch, or otherwise damage the interconnecting cable.

8. **CAREFULLY DRESS THE INTERCONNECTING CABLE** back into the opening in the Mounting Post, insert the Controller (15) into the opening, and install the Controller mounting screws (16) and lock washers (10).

2.4 ASSEMBLY – WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

Instructions for assembling the Wall Mounted Infant Intensive Care System are provided below; no special tools are required.

IMPORTANT:

- The Wall Mounted Infant Intensive Care System can be installed to provide any desired floor-to-Bassinet Mattress (top of mattress) height. The height of the Bassinet Mattress is determined by the position of the Mounting Bracket and must be established before the Bracket is installed.
- Figure 2.10 shows a typical installation that will provide a nominal floor-to-mattress height of 39 inches (99 cm). Note that the critical mounting dimension is 33.16 inches (84 cm), the measurement between the floor and the center line of the upper mounting holes in the Mounting Bracket; to raise or lower the mattress level, adjust the position of the Mounting Bracket up or down accordingly before installing.
- It should be noted, that regardless of what floor-to-mattress height is selected, the distance between the mattress and the Warmer Module will remain constant when the Wall Mounted Infant Intensive Care System is fully assembled.

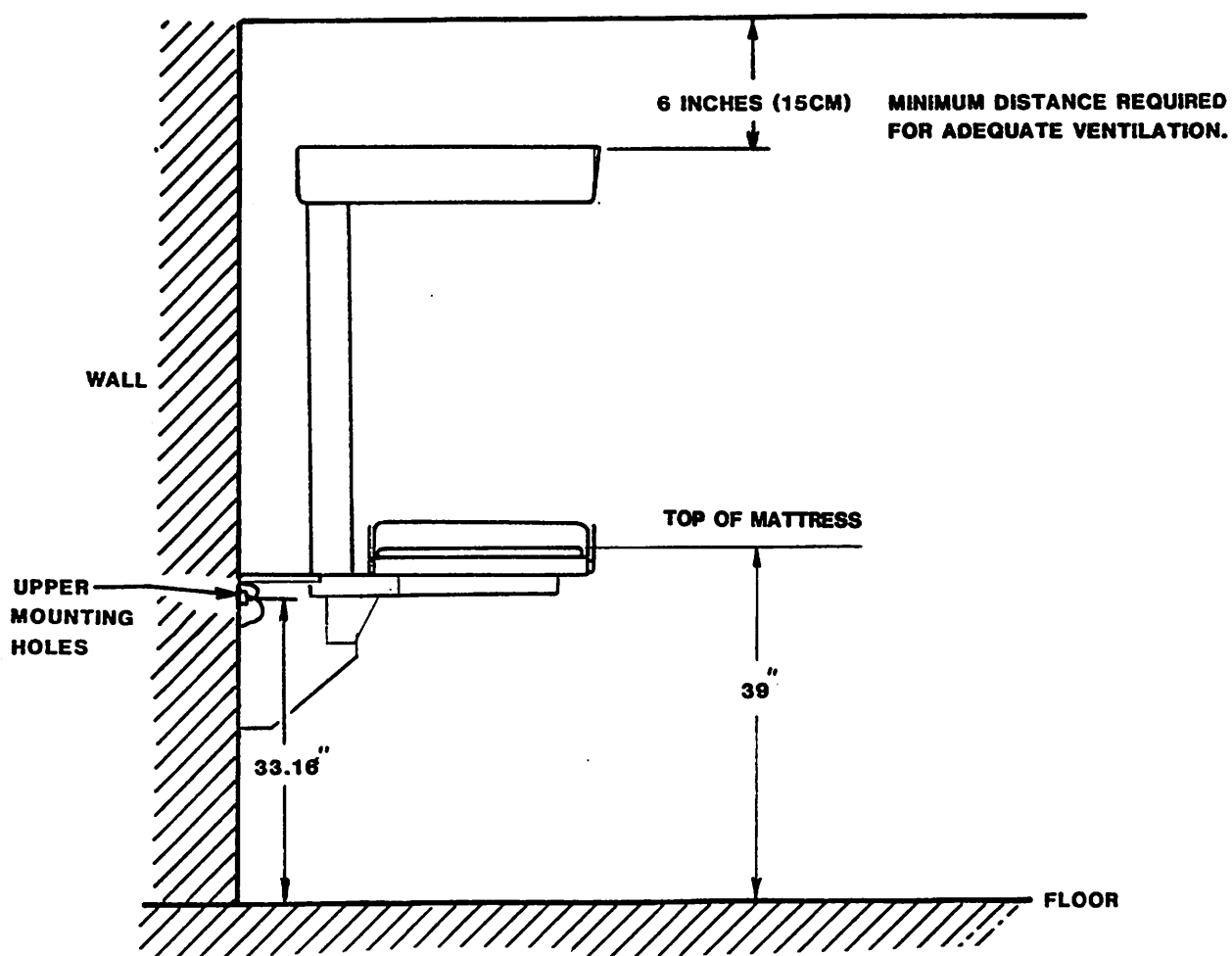


FIGURE 2.10 TYPICAL MOUNTING DETAILS, WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

2.4.1 INSTALLATION OF WALL MOUNTING BRACKET AND BASSINET SUPPORT

IMPORTANT:

- A professional experienced in structural design should be consulted to determine the specific construction and installation details to meet specific requirements.
- The recommended Wall Bracket mounting bolts are 5/16" diameter. Six bolts are required, four along the top of the Wall Mounting Bracket and two at the bottom; the bolts are not supplied with the equipment.
- Under no circumstances should the Wall Mounting Bracket be attached directly to plasterboard–drywall without sufficient reinforcement to meet the load requirements.

1. LOAD REQUIREMENT SPECIFICATIONS are as follows:

IMPORTANT: Two sets of Load Requirement Specifications are provided. One set of specifications is for use in installing the equipment when an optional Drawer Module Kit (part number 78 930 89 or 78 930 90) is not installed on the equipment. The second set of specifications is for use when either of the optional Drawer Module Kits is installed on the equipment. Use the appropriate Load Requirement Specifications.

A. If an optional Drawer Module Kit is not installed on the equipment, the load requirements are as follows:

- When securely fastened, the top four bracket mounting bolts must withstand a direct pull-out force of 1,500 pounds or 375 pounds per bolt. In addition, all six bracket mounting bolts must withstand a downward shear force of 1,300 pounds or 217 pounds per bolt.
- The wall must also be constructed to withstand a bending moment of 2,180 foot-pounds which is applied at the mounting bracket.

B. If an optional Drawer Module Kit is installed on the equipment, the load requirements are as follows:

- When securely fastened, the top four bracket mounting bolts must withstand a direct pull-out force of 2,200 pounds or 555 pounds per bolt. In addition, all six bracket mounting bolts must withstand a downward shear force of 1,700 pounds or 283 pounds per bolt.
- The wall must also be constructed to withstand a bending moment of 3,240 foot-pounds which is applied at the mounting bracket.

2. REFER TO FIGURE 2.11 and install the Wall Mounting Bracket on the mounting surface.

WARNING: Before proceeding with the assembly of the equipment, the Wall Mounting Bracket installation must be appropriately certified that it meets or exceeds the pull-out, shear and bending moment requirements specified. Failure to observe these precautions can result in an installation that is unsafe and may result in harm to the patient and/or operator.

3. REFER TO FIGURE 2.12A and install the Bassinet Support as follows:

- A. Raise the front end of the Bassinet Support (1) and insert the back flange (2) into the opening at the front of the Wall Mounting Bracket.
- B. Slide the Bassinet Support into the Wall Mounting Bracket and lower the front end of the Bassinet Support until the support pins (3) are engaged in the mounting slots (4) on the bracket.

NOTE: The Bassinet Support is properly positioned when the top edge of the back flange is located under the front edge of the Wall Mounting Bracket.

- C. Refer to Figure 2.12B. Install the two 5/16"–18 shoulder screws (5) and 5/16" lock washers (6) and the two 5/16"–18 x 5/8" screws (7) and 5/16" lock washers (8) that secure the Bassinet Support to the Wall Mounting Bracket; tighten all mounting hardware securely.

2.4.2 INSTALLATION OF MOUNTING POST

NOTE: If the Monitor Shelf Package (part number 78 165 70) and/or I.V. Pole Package (part number 78 166 70) accessories were ordered with the equipment, install the mounting brackets for these accessories on the Mounting Post before installing the post. (See instructions supplied with accessories.) If the mounting brackets have been factory installed, disregard this notice.

- 1. **REFER TO FIGURE 2.12B.** Insert the bottom end of the Mounting Post (9) into the opening in the top of the Mounting Bracket (10).
- 2. **ALIGN THE FOUR MOUNTING HOLES IN THE POST** with the four holes in the front of the Wall Mounting Bracket and secure the post in place by installing the four 1/4"–20 x 1/2" screws (11) and 1/4" lock washers (12) supplied; tighten all mounting hardware securely.

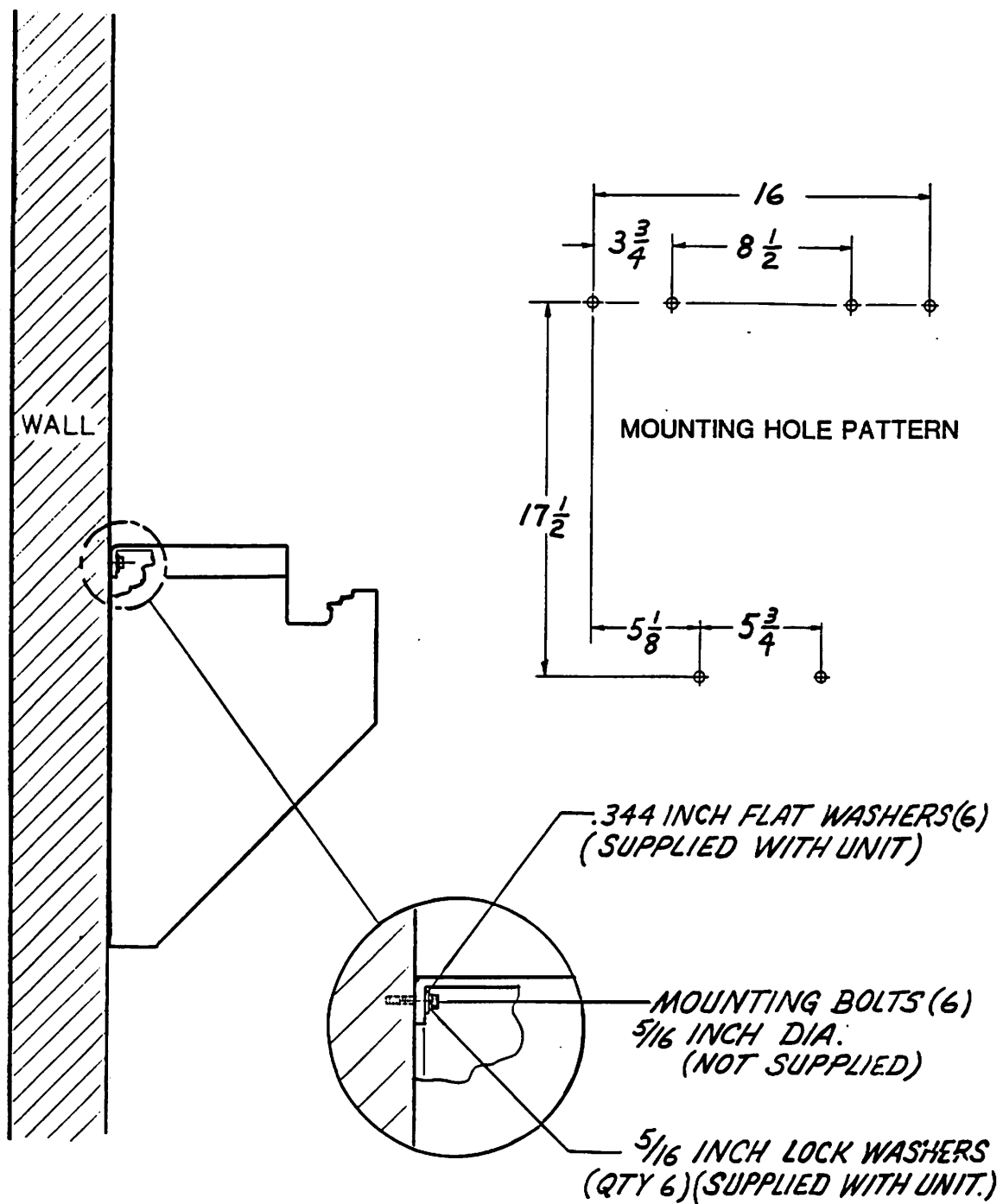


FIGURE 2.11 INSTALLATION OF MOUNTING BRACKET

**IICS
INSTALLATION**

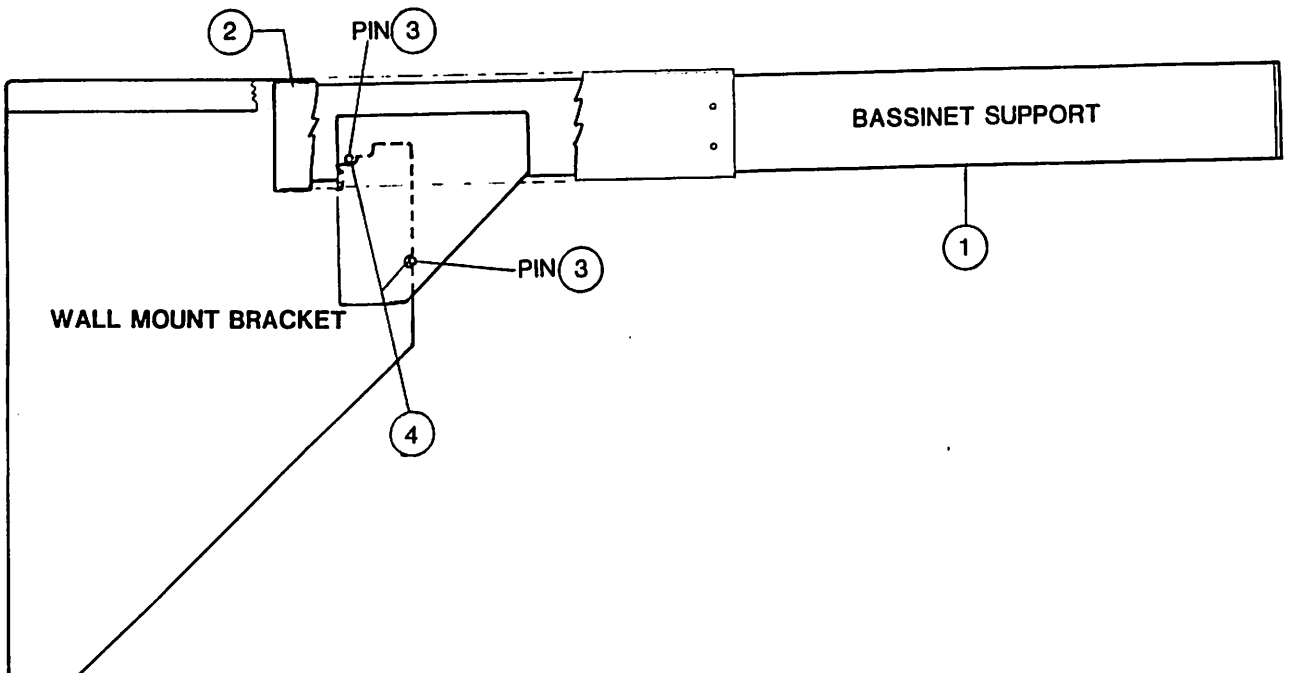
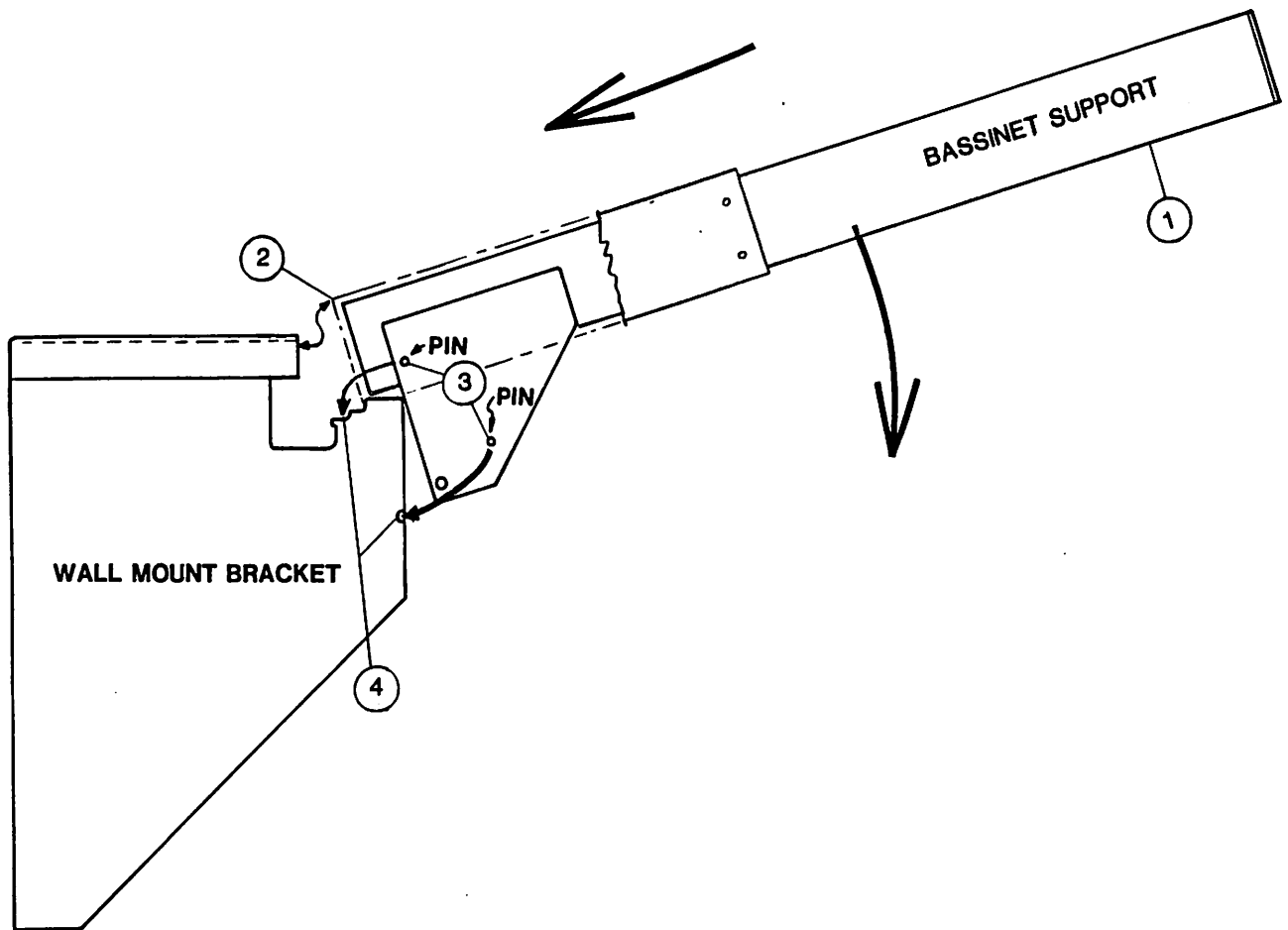


FIGURE 2.12A INSTALLATION OF BASSINET SUPPORT AND MOUNTING POST

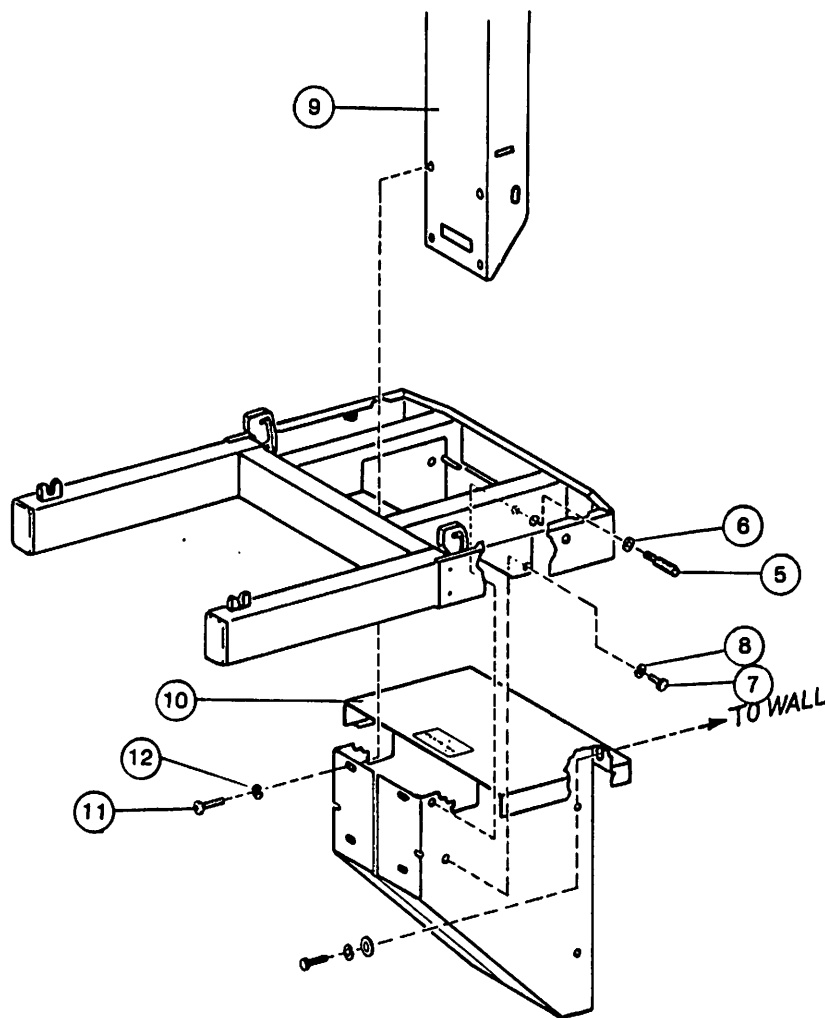


FIGURE 2.12B INSTALLATION OF BASSINET SUPPORT AND MOUNTING POST

2.4.3 INSTALLATION OF POWER MODULE

The procedure for installing the Power Module is the same as that given in paragraph 2.2.3 for the Infant Intensive Care System.

2.4.4 INSTALLATION OF WARMER MODULE AND CONTROLLER

The procedure for installing the Warmer Module and Controller is the same as that given in paragraph 2.2.4 for the Infant Intensive Care System.

2.4.5 INSTALLATION OF BASSINET

The procedure for installing the Bassinet is the same as that given in paragraph 2.2.5 for the Infant Intensive Care System.

2.4.6 INSTALLATION OF INSTRUMENT TRAYS

The procedure for installing the Instrument Trays is the same as that given in paragraph 2.2.6 for the Infant Intensive Care System.

2.5 ASSEMBLY – WALL MOUNTED INFANT WARMER

Instructions for assembling the Wall Mounted Infant Warmer are provided below; no special tools are required.

IMPORTANT: Because the Wall Mounted Infant Warmer can be used with a variety of bassinets which could have different mattress-to-floor heights (infant to radiant source distances), it is imperative that the distance between the underside of the Warmer Module and the top of the bassinet mattress be 32 ± 1 inches (81.3 ± 2.5 cm). The Infant Warmer should be installed on the wall to meet this specification for distance between the underside of the Warmer Module and the top of the bassinet mattress. Figure 2.13 shows the mounting arrangement for a typical bassinet. Note that the critical mounting dimension is the measurement of 1 inch (2.5 cm) between the top of the Bassinet Mattress and the center line of the upper mounting holes in the Mounting Bracket.

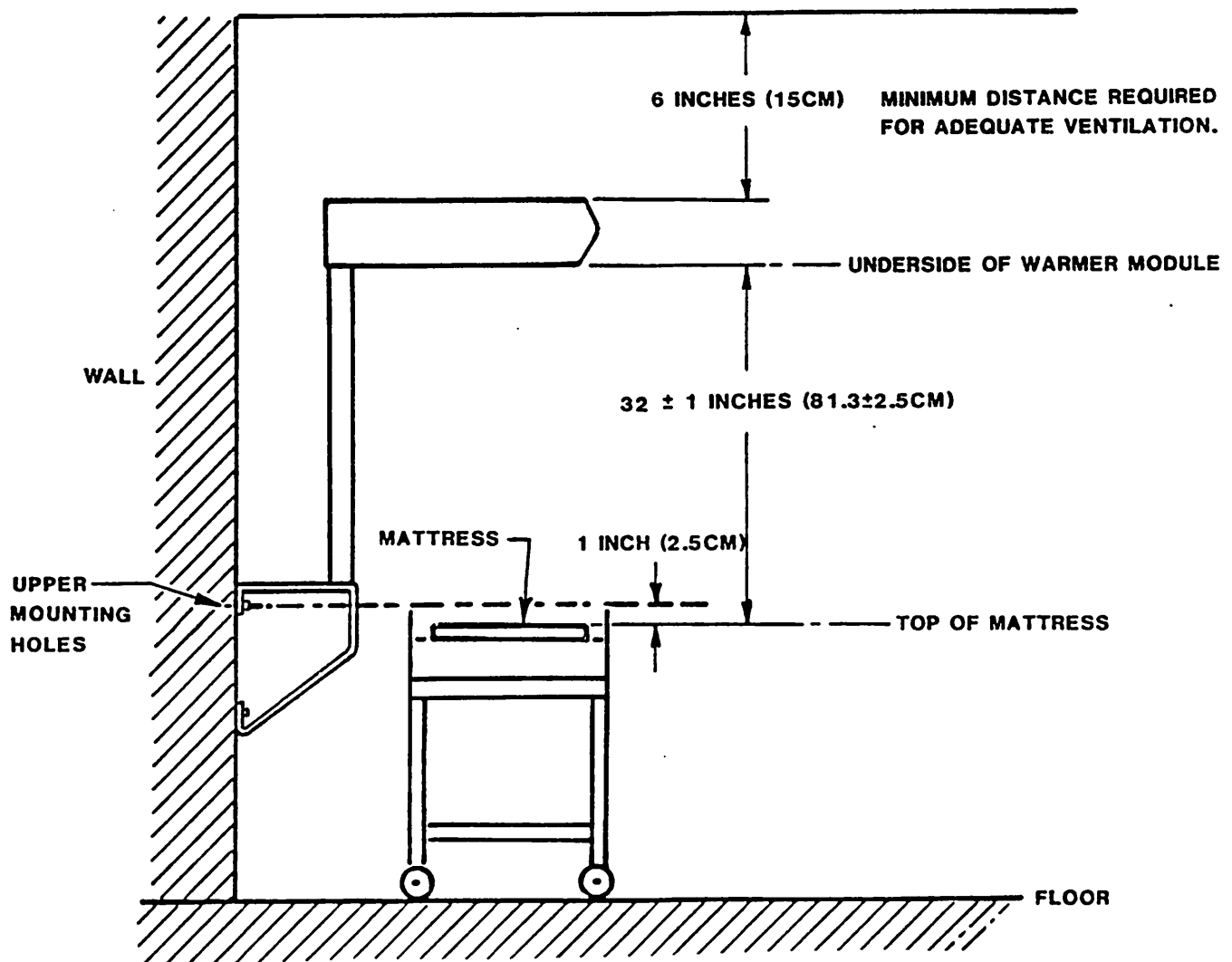


FIGURE 2.13 TYPICAL MOUNTING DETAILS, WALL MOUNTED INFANT WARMER

2.5.1 INSTALLATION OF MOUNTING BRACKET AND MOUNTING POST

1. REFER TO FIGURE 2.14 and install the Mounting Bracket on the wall.

IICS INSTALLATION

IMPORTANT:

- Under no circumstances should the mounting bracket be attached to plasterboard—drywall with the plasterboard—drywall being the material into which or through which the bracket is anchored. It may be the surface on which the bracket rests provided that the anchoring of mounting bolts or studs is sustained by a structural member of sufficient strength to meet the pull-out (tensile) load requirements.
- Recommended bolts or studs are 5/16" diameter. When securely mounted, each bolt or stud must withstand a direct pull-out load (tensile) of 150 pounds, exerted perpendicular to the wall.

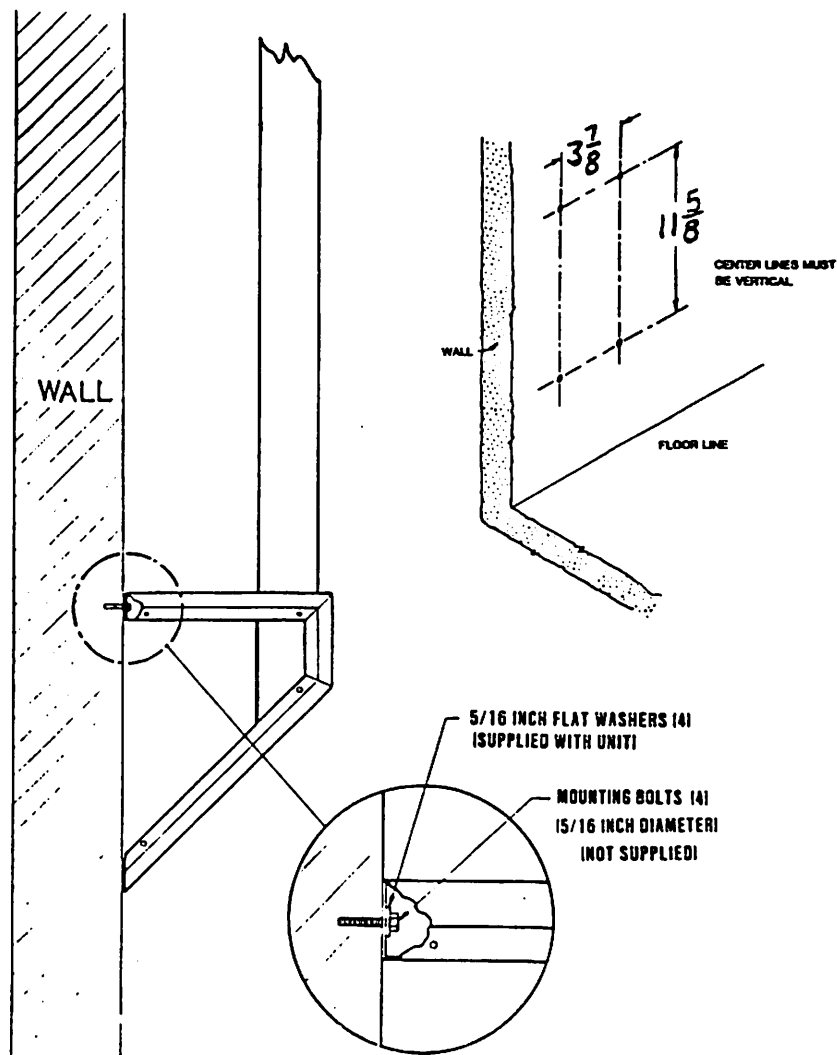


FIGURE 2.14 INSTALLATION OF MOUNTING BRACKET

2. REFER TO FIGURE 2.15 and install the Mounting Post on the Wall Mounting Bracket using the four mounting bolts and lock washers supplied. Install the two Finishing Panels using the Nylon Panel Fastening Plugs supplied.

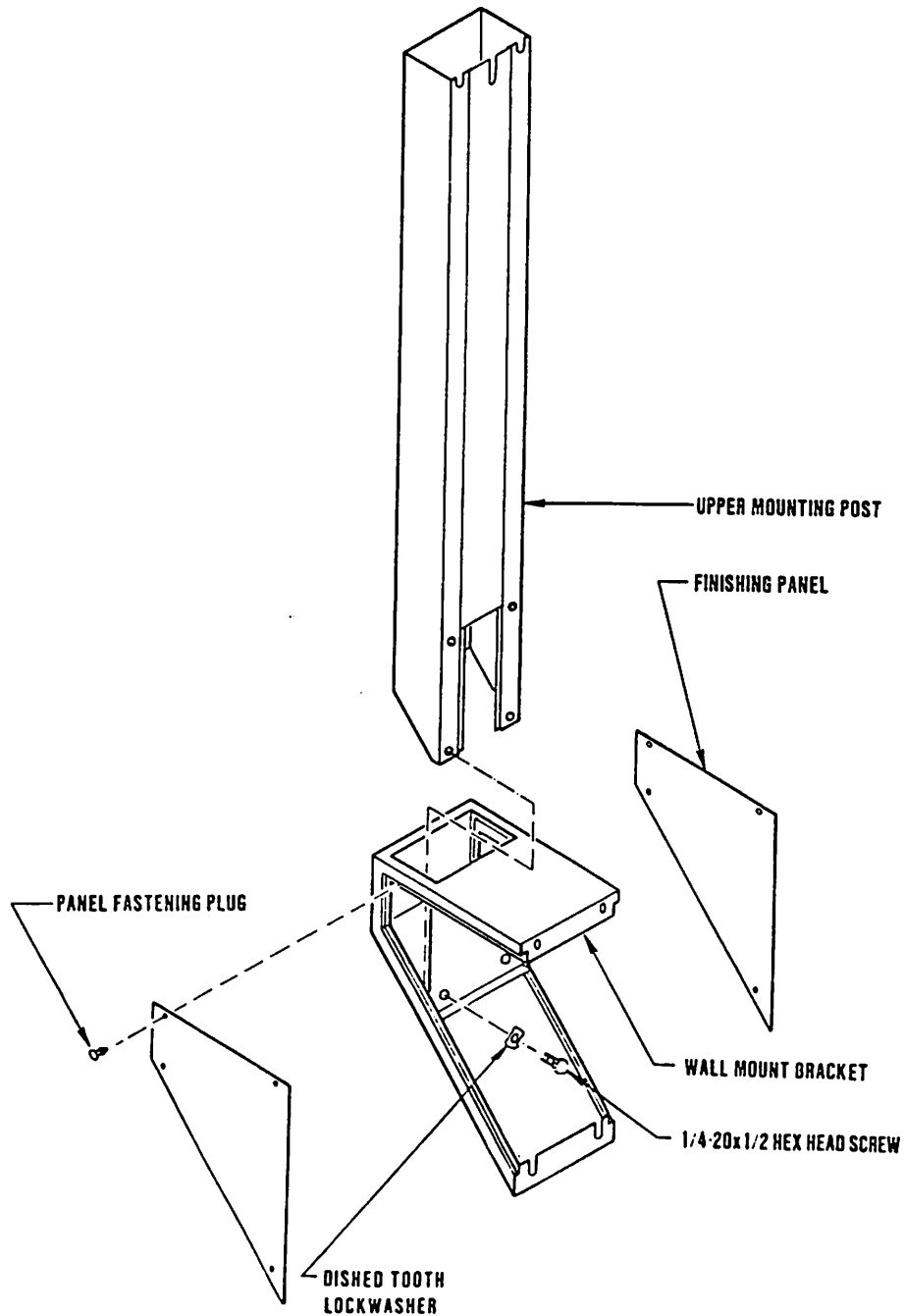


FIGURE 2.15 INSTALLATION OF MOUNTING POST

IICS INSTALLATION

2.5.2 INSTALLATION OF POWER MODULE

If the Power Module has not been installed in the Warmer Module, it will be necessary to install the Power Module before performing the Warmer Module installation procedure given in paragraph 2.4.3 of this manual. To install the Power Module, use the procedure given in paragraph 2.2.3. If the Power Module has been factory installed, proceed to paragraph 2.4.3.

2.5.3 INSTALLATION OF WARMER MODULE AND CONTROLLER

To install the Warmer Module and Controller, refer to Figure 2.16 and proceed as follows:

1. **INSERT THE TWO #10-32 x 5/8 INCH SCREWS (1) and #10 lock washers (2) supplied, through the spacer strips (17) and loosely thread them into the two topmost holes in the Warmer Module mounting bracket (3).**

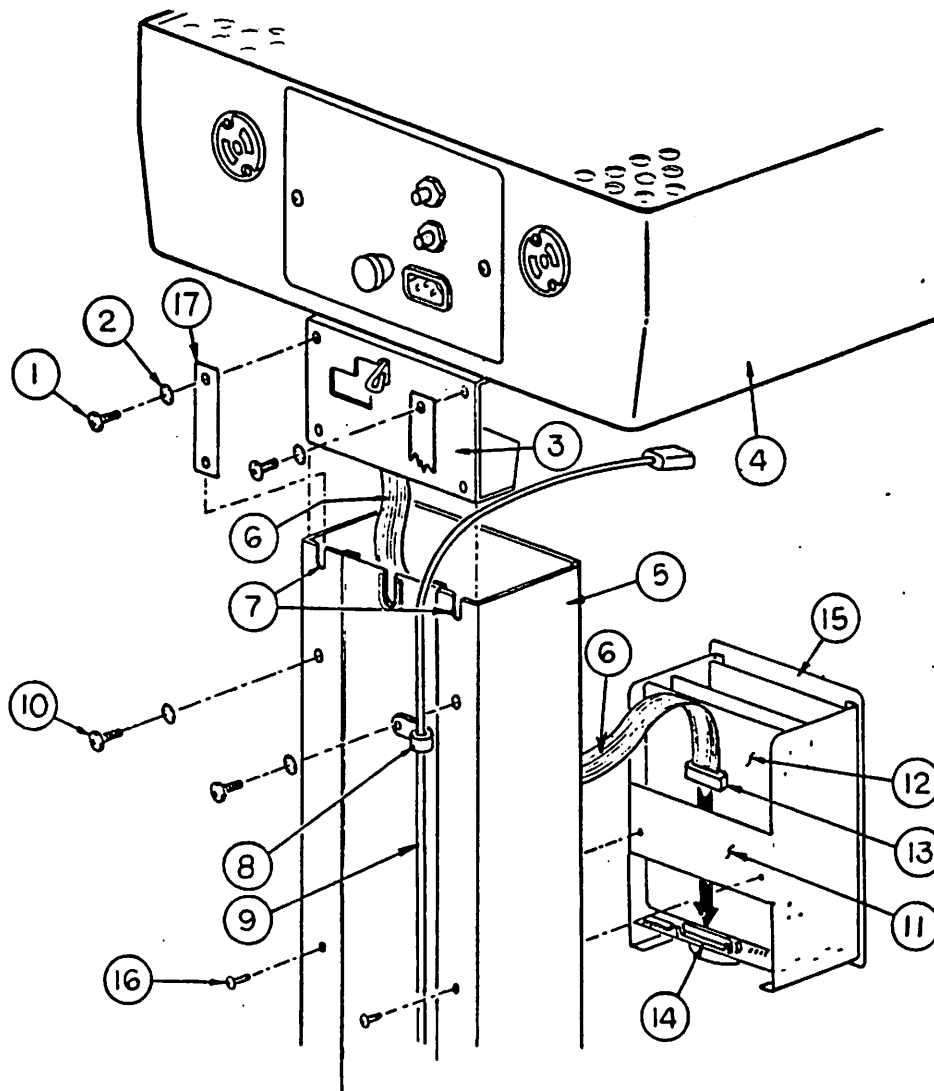


FIGURE 2.16 INSTALLATION OF WARMER MODULE AND CONTROLLER

2. **RAISE THE WARMER MODULE (4) above the open end of the Mounting Post (5) and insert the interconnecting ribbon cable (6) into the open end of the post.**

CAUTION: Use care to prevent damage to the interconnecting ribbon cable when installing the Warmer Module.

3. **SLOWLY LOWER THE WARMER MODULE** mounting bracket (3) and spacer strips (17) into the open end of the Mounting Post, with the spacer strips hanging down, until the screws (1) installed in step 1 are firmly seated in the two mounting slots (7) at the top of the post.

IMPORTANT: Make sure that the lock washers (2) are directly under the screw heads and are between the screw heads and the outer surface of the Mounting Post. Spacer Strips must be inside the post.

4. **INSTALL THE POWER CORD CLAMP** (8) on the Power Cord (9); position the clamp 11 inches from the end of the Power Cord.
5. **SECURE THE POWER CORD CLAMP** and power cord to the Mounting Post when installing the two lowermost Warmer Module mounting screws (10) as shown in Figure 2.16. It may be necessary to align the holes in the spacer strips with the holes in the post when installing these screws. Tighten all mounting screws securely.
6. **CAREFULLY THREAD THE INTERCONNECTING CABLE** (6) out through the Controller opening at the front of the mounting post.

CAUTION:

- When connecting the interconnecting cable to the Controller, make sure that the cable is not twisted or crimped.
 - Make sure that the interconnecting cable is dressed down between the circuit board and the back cross-member of the Controller chassis.
 - When connecting the interconnecting cable to the Controller, make sure that the key on the cable plug is inserted into the slot on the connector.
7. **CAREFULLY THREAD THE INTERCONNECTING CABLE** (6) down between the back cross-member (11) and the circuit board (12) on the Controller and connect the cable plug (13) to the connector (14). Make sure that the key on the plug is inserted into the slot on the connector and is firmly seated.

CAUTION: When installing the Controller in the Mounting Post, use care not to twist, crimp, pinch, or otherwise damage the interconnecting cable.

8. **CAREFULLY DRESS THE INTERCONNECTING CABLE** back into the opening in the Mounting Post, insert the Controller (15) into the opening, and install the Controller mounting screws (16).

2.6 OPERATIONAL CHECKOUT PROCEDURE

WARNING: The equipment should not be used if it fails to function properly. Service should be referred to qualified personnel.

The Operational Checkout Procedure should be performed before the equipment is first placed into use and after any disassembly for cleaning or maintenance.

IICS INSTALLATION

2.6.1 ELECTRICAL CHECKOUT

The Electrical Checkout consists of an automatic test sequence that takes place when primary power is applied to the equipment and a series of operator initiated checks. Refer to qualified service personnel if the unit does not perform as follows:

NOTE: The Alarm Test portion of the automatic test sequence tests the alarms by simulating a functional failure.

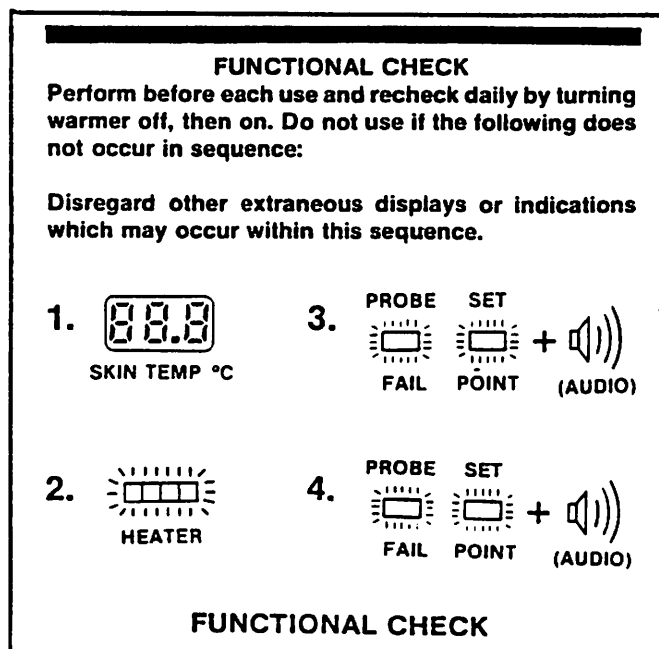
CAUTION: Make sure that the building power source is compatible with the electrical specifications shown on the unit. For proper grounding reliability, connect the power cord only to a properly marked hospital grade receptacle. **DO NOT USE EXTENSION CORDS.** If any doubt exists as to the grounding connection, do not operate the equipment.

1. **CONNECT THE POWER CORD** to a primary source of the proper voltage and frequency.
2. **SET THE CONTROL MODE SWITCH TO SKIN POSITION** and connect the Patient Probe to the PATIENT PROBE connector.
3. **TURN POWER ON** by depressing the WARMER switch on the Warmer Module; the SKIN mode indicator should light. The following automatic test sequence should occur (refer to the label below):

NOTE: During the automatic test sequence, disregard other extraneous displays or indications which may occur within this sequence.

- A. The SKIN TEMP °C digital display should display all eights (88.8).
- B. All HEATER power indicators should light.
- C. After a short delay, the displays blank, the PROBE FAIL and SET POINT alarm indicators light and the audible alarm sounds and then stops.
- D. After a short delay, the PROBE FAIL and SET POINT indicators light again, the audible alarm sounds, and the HEATER power indicators go out.

When the PROBE FAIL and SET POINT alarms stop, the automatic test sequence is complete.



4. **DEPRESS THE CAL CHECK SWITCH;** the SKIN TEMP °C display should indicate 36.0 ± 0.1 °C to indicate that the unit is calibrated.
5. **DISCONNECT THE POWER CORD PLUG** from the wall outlet; the POWER FAIL indicator should light, and the audible alarm should sound. Reconnect the power cord plug; the alarm should stop.
6. **SET THE CONTROL MODE SWITCH** to MANUAL; the MANUAL indicator should flash on and off continuously.
7. **SET THE HEAT CONTROL** to MIN and observe the HEATER power indicator; all indicator lamps should be off.
8. **SLIDE THE HEAT CONTROL** slowly toward MAX position; the four HEATER indicators should be illuminated when the control is set to MAX position.
9. **SET THE EXAMINATION LIGHT SWITCH** on the Warmer Module to the ON-1 position; the examination lamp should light. Set the switch to the OFF-0 position, the examination lamp should go out.
10. **THE ELECTRICAL CHECKOUT IS COMPLETE.**

2.6.2 MECHANICAL CHECKOUT

NOTE: No Mechanical Checkout is required for the Free Standing Infant Warmer. Perform the following steps of this procedure that are applicable to your equipment.

1. **CHECK WARMER MODULE SWIVEL OPERATION** as follows:
 - A. Depress the locking lever (Figure 2.17).
 - B. Swing the Warmer Module 65° to the left of center until it locks in position when the locking lever is released.
 - C. Depress the locking lever (Figure 2.17) and swing the Warmer Module 65° to the right of center until it locks in position when the locking lever is released.
 - D. Depress the locking lever (Figure 2.17) and return the Warmer Module to center position; the module should lock in place when the locking lever is released.

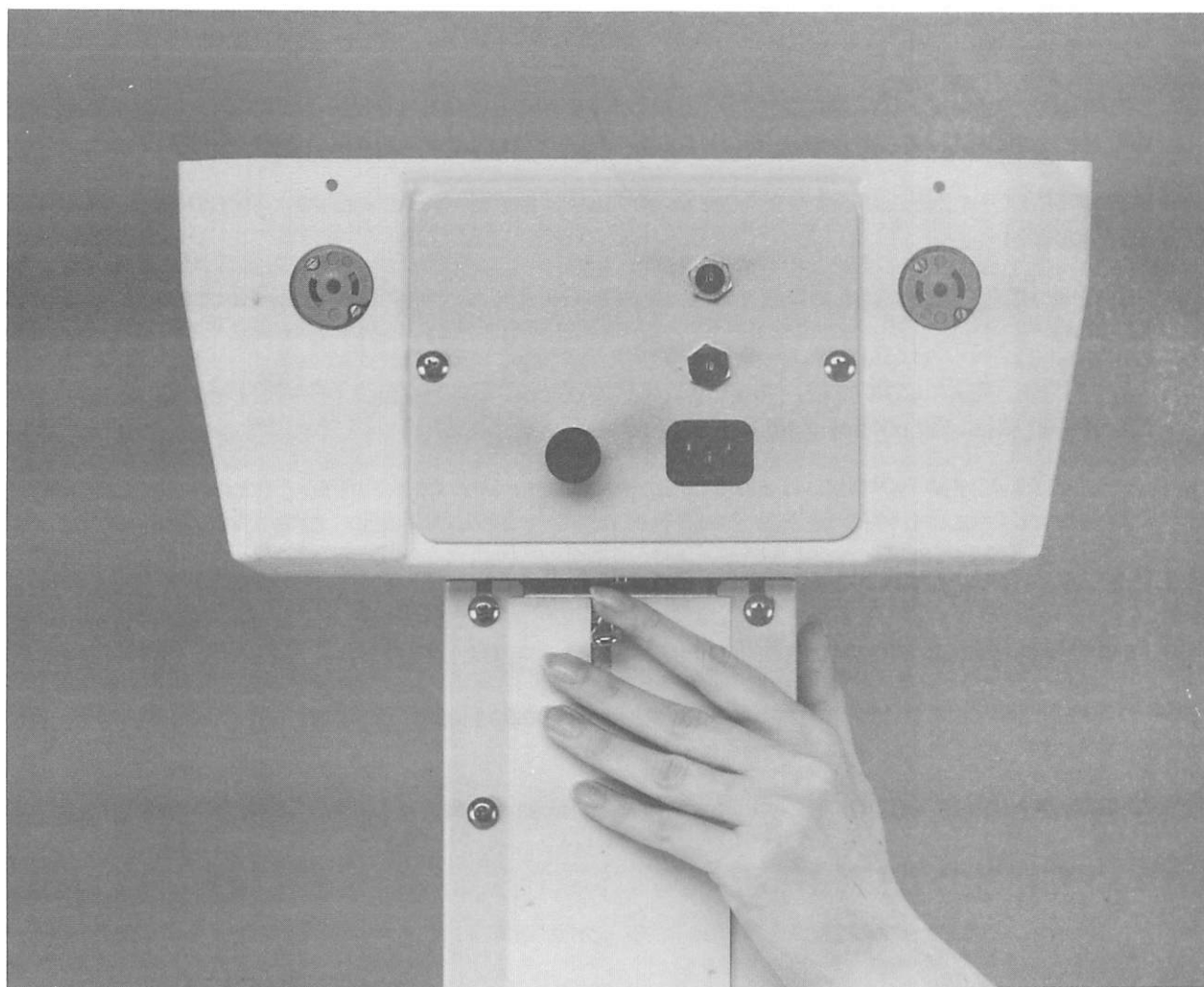


FIGURE 2.17 WARMER MODULE RELEASE LEVER

2. CHECK BASSINET TILT CONTROL operation as follows:

IMPORTANT: Hold the Bassinet with both hands when performing any of the following operations. Use one hand to operate the Bassinet Tilt Control and the other to hold the opposite end of the Bassinet.

WARNING: Do not release the Bassinet Tilt Control until it is positively engaged in the Bassinet Tilt Bracket to prevent injury due to accidental repositioning.

- A. Pull the Bassinet Tilt Control (Figure 2.18) out and raise it up to place the Mattress Tray Assembly in the Fowler position; check for positive engagement.
- B. Pull the Bassinet Tilt Control out and press it to the fully down position to place the Mattress Tray Assembly in the Trendelenburg position; check for positive engagement.
- C. Pull the Bassinet Tilt Control out and place it in the center position to return the Mattress Tray Assembly to the horizontal position; check for positive engagement.

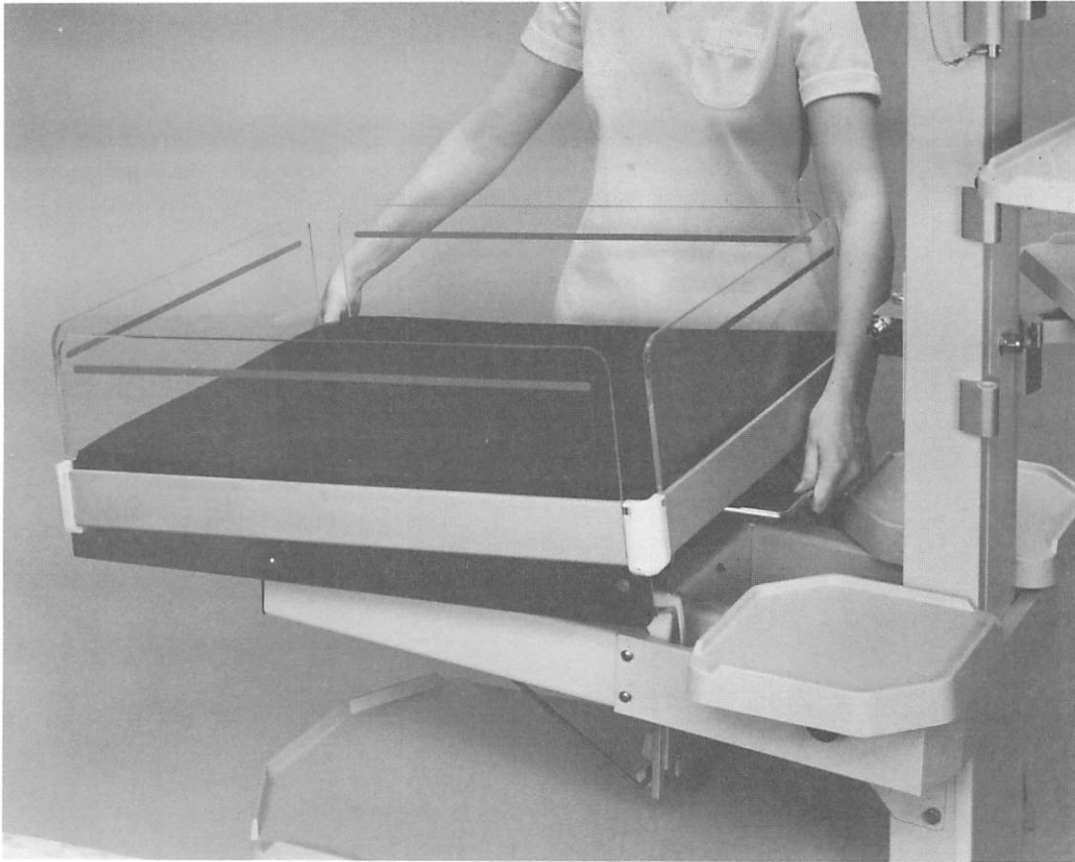


FIGURE 2.18 BASSINET TILT CONTROL OPERATION

3. **CHECK THE SIDE AND END PANELS** (Figure 2.19) of the Bassinet. Raise each panel and pivot it to hang straight down. Return the panel to the original position by reversing this procedure. Check that panel is positively engaged.
4. **CHECK OPERATION OF THE X-RAY TRAY** (Figure 2.20) as follows:
 - A. Lower the Front End Panel of the Bassinet as described in step 3.
 - B. Refer to Figure 2.20. To remove the X-ray tray from the bassinet, grasp the knob on the tray, lift slightly and pull tray out.
 - C. Replace the X-ray tray, by reversing the above procedure.

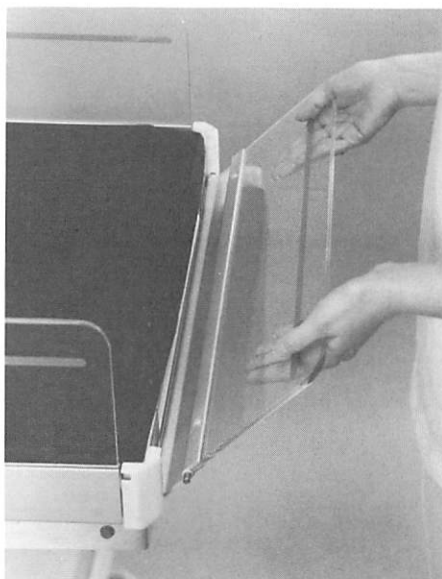


FIGURE 2.19 CHECKING SIDE AND END PANELS OF THE BASSINET

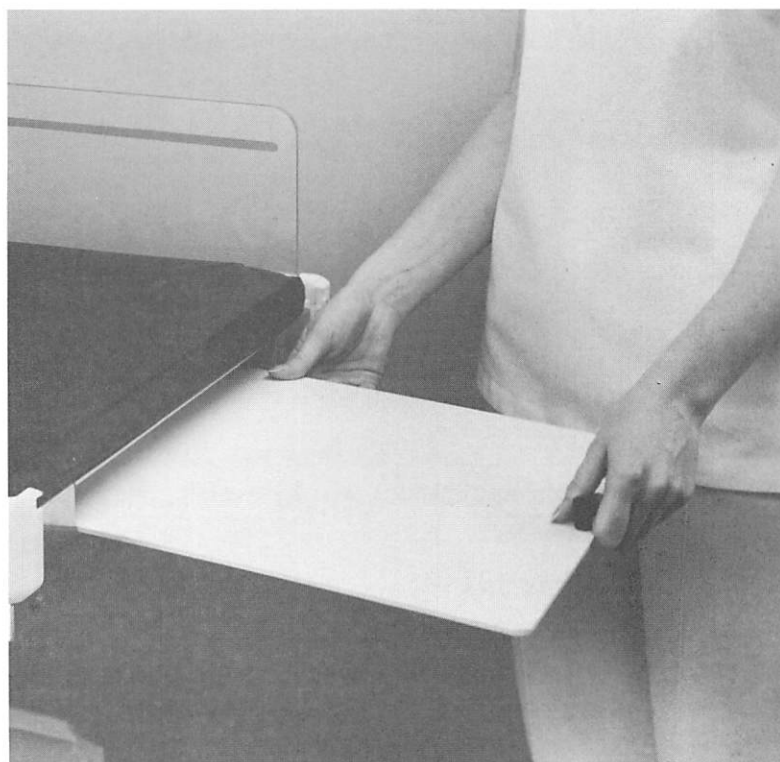
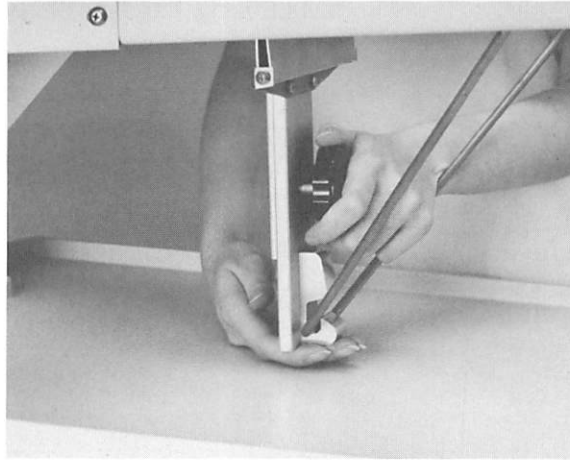


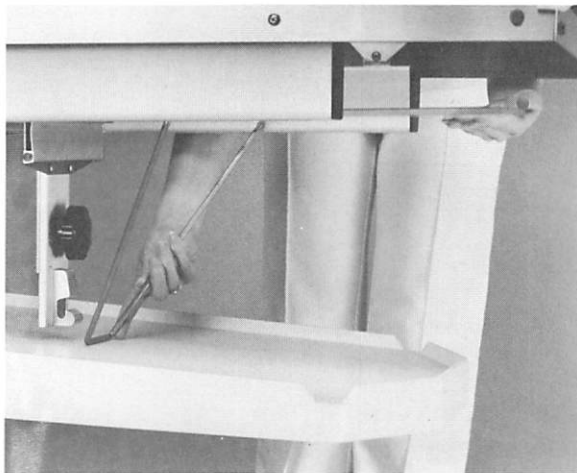
FIGURE 2.20 CHECKING OPERATION OF X-RAY TRAY

5. **CHECK OPERATION OF DIRECT MAGNIFICATION RADIOGRAPHY (DMR) CASSETTE HOLDER (ACCESSORY)** as follows:
 - A. Refer to Figure 2.21. Support the DMR X-ray cassette support (view A) with one hand and rotate the retaining knob in a counterclockwise direction with the other; the DMR support should slide up and down on the support bracket with hand pressure.

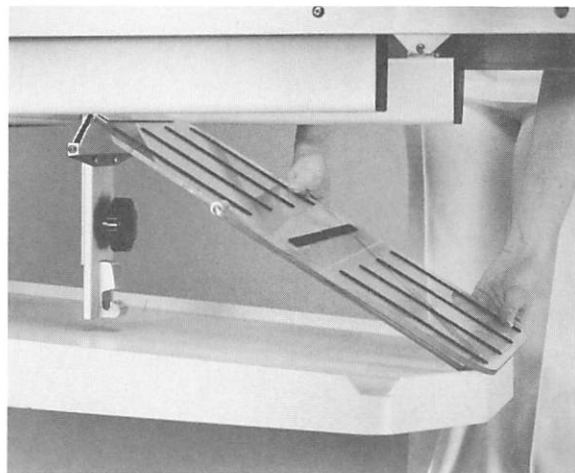
- B. Tighten the retaining knob.
- C. Release the X-ray shelf brace from the latch block (view B), and pull the shelf brace toward the front of the Bassinet; the shelf should tilt downward (view C).
- D. Return the X-ray shelf to the horizontal position by reversing step C.



VIEW A



VIEW B



VIEW C

**FIGURE 2.21 CHECKING OPERATION OF DMR CASSETTE HOLDER
(ACCESSORY)**

6. **CHECK CART SHELF OPERATION** as follows:
- A. To check the operation of the bottom Cart Shelf, reach through the opening under the front of the shelf (2.22) and pull down on the locking knob; slide the Cart Shelf forward until it reaches a positive stop.
 - B. If the unit is equipped with a middle Cart Shelf (Accessory), check the operation of the shelf as follows: pull down on the locking knob underneath the Shelf (Figure 2.23) and slide the shelf forward until it reaches a positive stop.

IICS INSTALLATION

- C. To replace either Cart Shelf, slide the Shelf toward the rear of the Cart until the latching pin engages the locking groove in the underside of the shelf. Check that the shelf is positively locked.
- 7. **CHECK MONITOR SHELF OPERATION (ACCESSORY)** as follows:
 - A. All Monitoring Shelves are mounted on the Post in swivel mounts as shown in Figure 2.24. Check that each shelf assembly may be pivoted away from the Post by hand pressure.
 - B. Check that each shelf may also be rotated 360° about its center point.
- 8. **THE MECHANICAL CHECKOUT IS COMPLETE.**

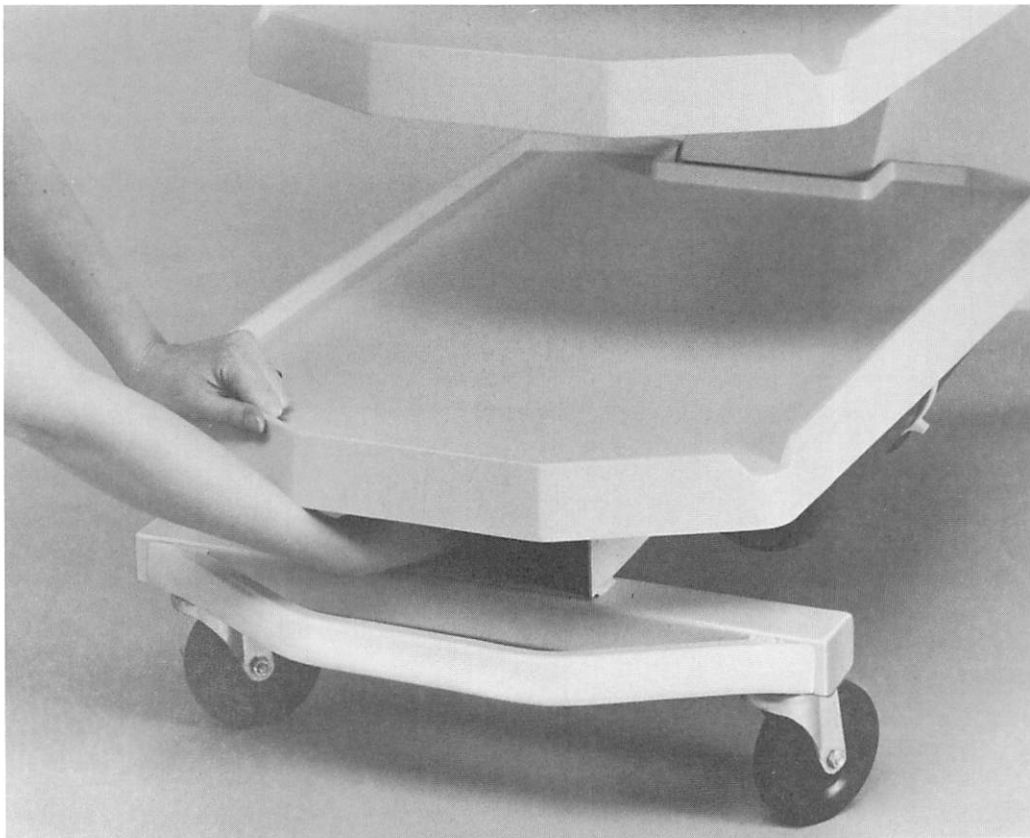


FIGURE 2.22 RELEASING CART SHELF

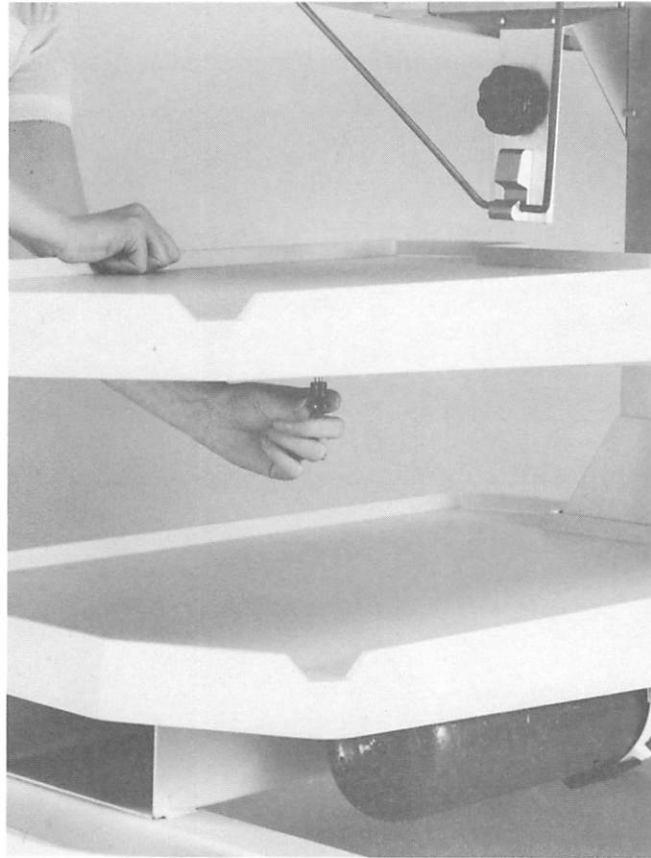


FIGURE 2.23 RELEASING MIDDLE CART SHELF (ACCESSORY)

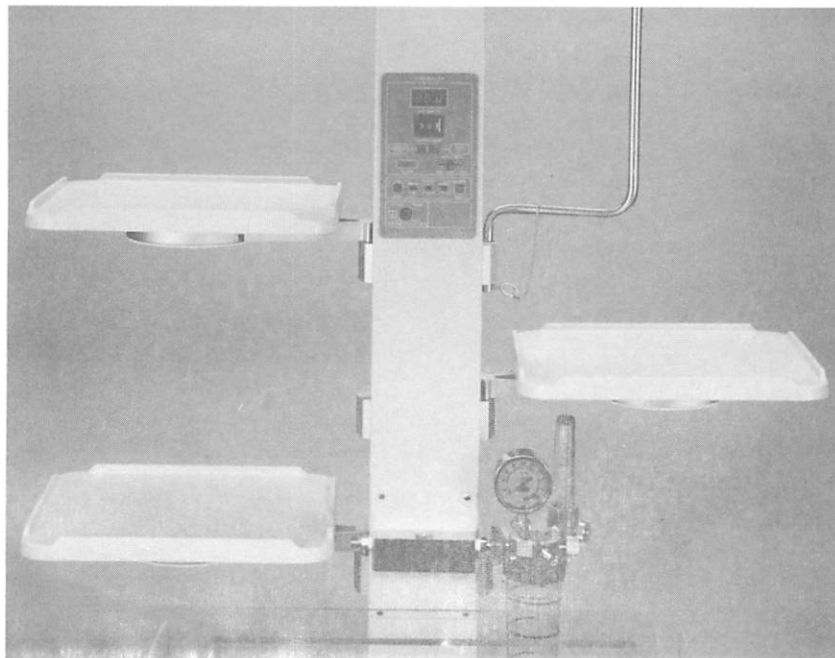


FIGURE 2.24 MONITOR SHELVES (ACCESSORY)

2.7 CLEANING

The equipment should be cleaned as necessary using the procedures given in Section 4 of this manual.

SECTION 3 TECHNICAL INFORMATION

3.1 SPECIFICATIONS

Specifications for the equipment are provided below. All specifications are subject to change without notice.

TABLE 3.1 SPECIFICATIONS

BASIC EQUIPMENT	
POWER REQUIREMENTS:	
100V Model	100 Vac, 50/60 Hz, 680W
110/120V Model	110/120 Vac, 50/60 Hz, 680W
220/240V Model	220/240 Vac, 50/60 Hz, 680W
OVERLOAD PROTECTION:	
100V and 110/120V Models	Two 10A circuit breakers (see Note 1)
220/240V Models	Two 5A circuit breakers (see Note 2)
<u>NOTE 1:</u> Changed to single 10A circuit breaker and then to single 13A circuit breaker in later production.	
<u>NOTE 2:</u> Changed to two 7A circuit breakers in later production.	
CHASSIS LEAKAGE CURRENT	Less than 100 μ A
EXAMINATION LIGHT ILLUMINANCE	100 foot candles (nominal) at mattress center
ALARMS:	
PROBE FAIL	Actuates if Skin Probe is open, shorted, unplugged, or if the skin temperature reaches 39.0 °C
SET POINT	Actuates if the skin temperature deviates ± 0.5 °C ± 1.0 °C from the set point temperature for longer than 15 seconds
POWER FAIL	Actuates when there is a loss of power
SILENCE/RESET Switch Malfunction	Actuates after 15 seconds if SILENCE/RESET Switch malfunctions or is held depressed for longer than 15 seconds
SKIN TEMPERATURE SET POINT RANGE	34.0 °C to 37.9 °C
SKIN TEMPERATURE DISPLAY:	
Accuracy	± 0.2 °C
Type	Digital LED with 0.1 °C resolution
Correlation of Displayed Temperature to Skin Temperature	± 0.2 °C

TABLE 3.1 SPECIFICATIONS (CONT.)

BASIC EQUIPMENT	
SKIN TEMPERATURE VARIABILITY AT TEMPERATURE EQUILIBRIUM	0.2 °C
MANUAL HEAT CONTROL	Fully adjustable from zero to maximum heater power (560W nominal)
WARMER MODULE SWIVEL (Not provided on Free Standing Warmer)	65° either side of center position
NOMINAL DIMENSIONS – INFANT INTENSIVE CARE SYSTEM	
Height (Maximum)	77 inches (195.6 cm)
Height (Alternative lower position)	74.75 inches (189.9 cm)
Width (With Warmer Module in Center position)	28 inches (71 cm)
Depth	43 inches (109.22 cm)
Mattress Width	21 inches (53.34 cm)
Mattress Length	26 inches (66.04 cm)
Weight	185 lbs (84 kg)
Warmer Module Swivel	65° either side of center position
Mattress Height (High position)	39 inches
Mattress Height (Low position)	36.75 inches
NOMINAL DIMENSIONS AND WEIGHT – FREE STANDING INFANT WARMER	
Height (Maximum)	77 inches (195.6 cm)
Height (Intermediate position)	74 inches (188 cm)
Height (Low position)	71 inches (180 cm)
Height of Base	3.5 inches (9 cm)
Width (Maximum)	28 inches (71 cm)
Depth	38.5 inches (98 cm)
Weight	103 lbs (47 kg)
NOMINAL DIMENSIONS AND WEIGHT – WALL MOUNTED INFANT INTENSIVE CARE SYSTEM	
Height (Unmounted)	59 inches (150 cm)
Width (With Warmer Module in Center Position)	22 inches (56 cm)
Depth (Including Wall Bracket)	46 inches (117 cm)
Weight	124 lbs (56 kg)
NOMINAL DIMENSIONS AND WEIGHT – WALL MOUNTED INFANT WARMER	
Height (Unmounted)	53 inches (135 cm)
Width (With Warmer Module in Center Position)	12.5 inches (31.75 cm)
Depth (Including Wall Bracket)	38 inches (97 cm)
Weight	44 lbs (20 kg)
Warmer Module Swivel	65° either side of center position

TABLE 3.1 SPECIFICATIONS (CONT.)

BASIC EQUIPMENT	
ENVIRONMENTAL:	
Ambient Operating Temperature	68 °F (20 °C) to 86 °F (30 °C)
Humidity	0 to 95%
Vibration and Shock	Normal nursery handling
Altitude	Sea level to 1.9 miles (3 km)
ACCESSORIES	
OXYGEN DELIVERY SYSTEM REQUIREMENTS:*	
Oxygen From Wall Source	50 psi nominal
Oxygen From Cylinder	up to 2500 psi
MONITOR SHELF LOADING*	up to 40 lbs (18 kg) per shelf or 50 lbs (22.7 kg) per side total
CART SHELF LOADING**	up to 50 lbs (22.7 kg) per shelf
PHOTOTHERAPY SYSTEM	9μW/cm ² /nm (Nominal light energy output at center mattress, 400–500 nanometer wavelength)
*Infant Intensive Care System and Wall Mounted Infant Intensive Care System Only.	
**Infant Intensive Care System Only.	

3.2 THEORY OF OPERATION

3.2.1 GENERAL

This section contains a system functional description of the equipment and detailed Theory of Operation of the Controller and Power Module used in the equipment. A system block diagram is shown in Figure 3.1.

3.2.2 SYSTEM FUNCTIONAL DESCRIPTION

WARMER MODULE

The radiant heat from the vented hood is directed by parabolic reflectors onto the bassinet mattress with minimum discomfort to attending personnel. The Warmer is controlled by a single Controller which provides either manual heater control or automatic skin temperature control. Located in the Warmer Module is an examination light which is controlled by a switch on the front of the Warmer Module. The examination light provides added illumination of the mattress area.

CONTROLLER

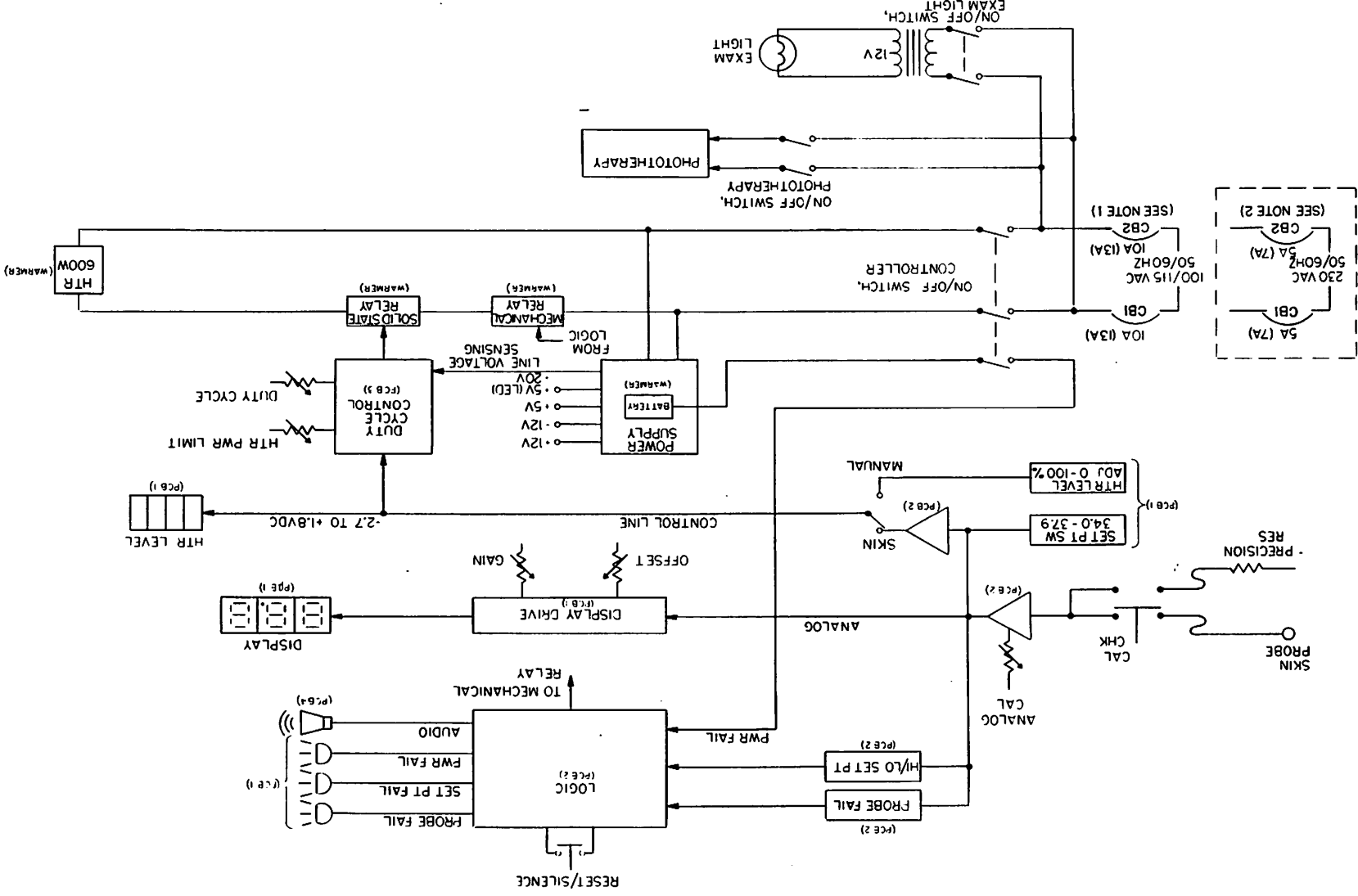
When operated in the Manual Control Mode, the Controller permits the heat output of the Warmer Module to be adjusted from zero to maximum settings. When operated in Skin Temperature Control Mode, the Controller utilizes a Skin Temperature Probe connected between the Controller input and the infant to automatically adjust the heat output of the Warmer Module to maintain a desired preset skin temperature. Thumbwheel switches permit adjustment of skin temperature set point and a digital display provides temperature readout.

ALARMS

Each time the unit is turned on, an automatic test sequence is initiated to verify that the visual displays and the audible alarm are functional. Alarms are provided for power failure, high and low skin temperature (when in Skin Temperature Control Mode); probe failure and unplugged probe, SILENCE/RESET switch malfunction, and manual alert when in Manual Control.

POWER FAIL If power to the unit is interrupted for any reason, the POWER FAIL indicator will light and the audible alarm will sound continuously. When power is restored, the alarm circuit is self-resetting.

SET POINT (HIGH). If the temperature sensed by the skin probe is 0.5 °C above the set point temperature, a high set point alarm will occur after a 15-second delay. The SET POINT indicator will flash, a continuous audible alarm will sound and the heater is turned off. In Model CM78-1, this alarm cannot be reset until the alarm condition is corrected. In Model CM78-2, the audible portion of the alarm can be silenced by depressing the SILENCE/RESET Switch; however, the indicator will continue to flash. If the condition is not corrected within 15 minutes, the audible alarm will resume. When the alarm condition is corrected, the circuit will automatically reset.



NOTE 1. CB1 AND CB2 ARE 10A THEN CHANGED TO 13A
(FIRST PRODUCTION). CB2 REMOVED IN LATER PRODUCTION.
NOTE 2. CB1 AND CB2 CHANGED TO 7A IN LATER PRODUCTION.

FIGURE 3.1 SYSTEM BLOCK DIAGRAM

IICS

TECHNICAL INFORMATION

NOTE: If not manually reset when the sensed temperature returns to set point and the temperature falls to 0.5 °C below set point, the system changes to a low set point alarm condition and the heater turns on again. The alarm indications will now cease if the sensed temperature returns to set point (see SET POINT (LOW) which follows).

SET POINT (LOW). If the temperature sensed by the skin probe is 0.5 °C below the set point temperature, a low set point alarm will occur after a 15-second delay. The SET POINT indicator will flash and a continuous audible alarm will sound. The audible portion of the alarm can be silenced by depressing the SILENCE/RESET switch; however, the indicator will continue to flash. If the condition is not corrected within 15 minutes, the audible alarm will resume. When the alarm condition is corrected, the circuit will automatically reset.

If the infant's skin temperature is more than 0.5 °C below the SET TEMP, the visual SET POINT alarm will flash but the audible alarm is automatically silenced for the first 15 minutes of warm-up or until the skin temperature is within 0.5 °C of SET POINT, whichever is shorter. After the initial 15 minute period, the low SET TEMP alarm returns to normal function.

NOTE: The SILENCE/RESET switch must be depressed for at least 2 seconds after the audible signal is silenced to allow internal circuitry to reset. Failure to do so could result in alarm reactivation.

PROBE FAIL. If the skin temperature probe is open, shorted, or unplugged, a probe alarm will occur after a 15-second delay. The display will blank, the PROBE FAIL alarm indicator will flash, a continuous audible alarm will sound, and the heater will be turned off. This alarm cannot be reset until the alarm condition is corrected. The PROBE FAIL alarm will also sound if the skin temperature reaches 39.0 °C.

SILENCE/RESET SWITCH MALFUNCTION. If the SILENCE/RESET switch malfunctions, a continuous audible alarm will sound after a 15-second delay. The alarm will also sound if the switch is held depressed for more than 15 seconds. This alarm cannot be reset until the alarm condition is corrected.

MANUAL: After 10 minutes of operation, an intermittent beep (Manual Alert) will sound every 30 seconds. During the next 5-minute period, the heater may be reset for an additional 15 minutes without the heater turning off by pressing the SILENCE/RESET switch. If the circuit is not reset, the heater is automatically turned off when 15 minutes of continuous operation have elapsed, the MANUAL indicator light goes off, and a steady audible alarm is activated.

NOTE: The SILENCE/RESET switch must be depressed for at least 2 seconds after the audible signal is silenced to allow internal circuitry to reset. Failure to do so could result in alarm reactivation.

POWER MODULE

The Power Module plugs into the Warmer Module. A detachable power cord supplies line voltage to the Power Module and overload protection is provided by circuit breaker(s). The Power Module supplies power to the Controller by means of a plug-in ribbon cable located in the warmer housing.

The Power Module also provides power to the phototherapy connectors, examination light, and warmer heating element in the warmer housing.

3.3 DETAILED CIRCUIT DESCRIPTION

The following paragraphs contain detailed circuit descriptions of the following components of the equipment.

- Warmer Module
- Power Module
- Controller

3.3.1 WARMER MODULE

Refer to Figures 7.1 and 7.1A. The Warmer Module contains a 600 watt quartz heater (HTR1) that provides radiant heat for infant warming. The heater is contained in a vented hood and the radiant heat is directed onto the mattress by a parabolic reflector. The Warmer Module also contains the examination light and connectors for the optional Phototherapy Attachment.

Power for the Warmer Module is supplied by the Power Module (para. 3.3.2) which plugs into the warmer housing. The interconnection is made through connector J2. The WARMER ON–OFF switch (S1) controls application of ac power to the Power Module which supplies dc power to the Controller (para. 3.3.3). The Controller, in turn, controls heater power. The EXAMINATION LIGHT ON–OFF switch (S3) and transformer T2 supply power to the examination light (DS1). The PHOTOTHERAPY ON–OFF switch (S2) controls application of power to the phototherapy connectors (J11 and J12).

3.3.2 POWER MODULE

Refer to Figures 7.1 and 7.1A. The Power Module plugs into the Warmer Module through connector J2 and supplies all ac and dc power to the equipment. Primary ac power is applied through a detachable power cord to ac input connector J1. Circuit breaker(s) provide overload protection for the ac line.

When the WARMER ON–OFF switch (S1) on the Warmer Module is set to the ON–1 position, power is applied to the primary winding of power transformer T1 through connectors J2, J5, and J6. Transformer T1 has two secondary windings, one feeds bridge rectifier CR3 and the other feeds rectifiers CR5 and CR6. The positive (+) output of CR3 feeds voltage regulators VR1 and VR2 which in turn, produce regulated outputs of +12 Vdc and +5 Vdc, respectively. These outputs are fed to J10–5 and –6 and J10–17 and –18. CR3 also produces an unregulated +20 Vdc output at J10–9. The negative (–) output of CR3 produces an unregulated –20 Vdc output at J10–10 and, in conjunction with voltage regulator VR3, a regulated –12 Vdc output at J10–15 and –16. Filtering for these circuits is provided by capacitors C1 through C5.

Rectifiers CR5 and CR6 produce an unregulated +5 Vdc output at J10–3 and –4. Filtering for this circuit is provided by capacitor C6.

Solid state relay (SSR) K2 controls heater power during operation. The relay is actuated by the signals SSR HI (J10–7) and SSR LO (J10–8) which are generated on the Controller Control Board PCB3.

Relay driver Q1 and relay K1 are activated by the signal RELAY DRIVE (J10–20). The control signal is generated on PCB2. The circuit provides a redundant means of cutting off power in the event of an alarm.

Battery BT1 and associated components provide the voltage necessary to activate the POWER FAIL alarm in the event of primary power failure.

3.3.3 CONTROLLER

DISPLAY BOARD – PCB1

The Display Board, PCB1, contains the digital readout for skin temperature, alarm indicators, heater output indicators, control mode indicator and switches for calibration, reset and control mode. Refer to Figure 7.2.

TEMPERATURE DISPLAY

The analog signal inputs from the Measurement/Digital Board, PCB2, are converted to the digital signals needed to drive the seven segment LED displays, DS1 through DS3, by the A/D converter U1. The A/D converter includes auto zero and current limiting for the LED drivers. The number of readings per second is determined by the RC network R6 and C4 which gives approximately one reading per second. C3 is a bypass capacitor and is used to reduce noise in the voltage reference circuit. The RC network R5, C1 and C2 is used to provide proper operation of the auto zero and integrator circuits in the A/D converter.

The sensitivity of the A/D converter is determined by the voltage reference at pin 36. Resistor network R11 and R12 sets the voltage reference at a nominal 2.0 volts which will provide a sensitivity of 200 mV per °C. Trimpots R2 and R7 set the converters offset and gain, respectively.

The diode network CR1, CR2, and CR3 is used to provide display blanking when the input voltage is outside the permissible limits caused by the temperature measuring thermistor being either open or shorted.

The lamp test function is provided by U4 which drives pin 37 of the A/D converter high, lighting all the display segments and giving a reading of 88.8. Note that the decimal point is driven through R1 at all times, so the decimal point is lighted, even when the line input range is exceeded, blanking the display.

The A/D converter uses the system +5V supply and a –5V supply derived from a unity gain inverting op amp which insures power supply tracking. The LED supply is obtained from a separate high current +5V supply.

CONTROLS

The CAL CHECK switch, S2, is a momentary pushbutton switch that is used to check the temperature measuring circuit calibration. Depressing this switch inserts a precision resistor, R17, in place of the skin probe and will cause the temperature display to read 36.0 ± 0.1 °C if the circuit is calibrated.

The SILENCE RESET switch, S3, is used to reset various circuits in the Controller as follows:

1. **IN SKIN TEMPERATURE CONTROL MODE**, it performs the following:
 - A. Silences low SET POINT alarm for nominally 15 minutes; alarm silence is automatically over-ridden if another alarm occurs within the period of silence.
 - B. Resets PROBE FAIL alarm only after the condition is corrected.
 - C. In Model CM78–1 resets high SET POINT alarm only after the condition is corrected.
 - D. In Model CM78–2 silences high SET POINT alarm for nominally 15 minutes; alarm silence is automatically overridden if another alarm occurs within the period of silence.
2. **IN THE MANUAL CONTROL MODE**, it performs the following:
 - A. Resets the manual control timer after 10 minutes of expired time.

- B. Resets manual control timer, silences alarm, and restores heater power after 15 minutes of expired manual control.

The CONTROL MODE switch, S1, is a three section switch which controls the following:

1. **SWITCH SECTION S1-A** controls the selection of the SKIN control mode indicator, DS4, or MANUAL control mode indicator, DS5.
2. **SWITCH SECTION S1-B** controls the selection of either the manual or skin control circuitry on the Measurement/Digital Board PCB2 (refer to Figure 7.3).
3. **SWITCH SECTION S1-C** serves as a manual switching point for logic levels used by various control circuits on the Measurement/Digital Board PCB2 (refer to Figure 7.3).

The MIN-HEAT-MAX control, R35, provides the means for adjusting heater output in the manual mode of operation. The control permits adjustment of heater power from zero to maximum.

The SKIN TEMP °C thumbwheel switches, S4, are used to select set point temperature during skin mode of operation. The binary coded decimal switches interconnect with binary weighted resistors on the Measurement/Digital Board PCB2 (refer to Figure 7.3) to control the set point temperature. The switches have mechanical stops to limit the setting of the set point to between 34.0 °C and 37.9 °C.

INDICATORS

The SKIN Control Mode indicator, DS4, lights when operating in skin temperature control mode. The MANUAL Control Mode indicator, DS5, flashes continuously when operating in manual control mode. The MANUAL Control Mode indicator may be switched off by a signal from PCB2.

The HEATER level indicator, DS6, is a four segment LED that provides a relative indication of heater output. The indicator segments are driven by a quad comparator, U3, so that the heater output is indicated in discrete steps. The number of lamps illuminated indicates the relative heater output.

The SET POINT alarm indicator, DS8 and U2, flashes and a continuous audible alarm occurs when the skin temperature deviates ± 0.5 °C from the set point temperature for longer than 15 seconds. If the temperature returns to within 0.5 °C of set point, the alarms are reset as follows:

Low Temperature Alarm: Resets automatically.

High Temperature Alarm: Must be manually reset (CM78-1).

High Temperature Alarm: Resets automatically (CM78-2).

If the Model CM78-1 is not manually reset when sensed temperature returns to set point, and temperature falls to 0.5 °C below set point, alarm system changes to a low set point alarm condition and heater turns on again. Alarm indications will now cease if sensed temperature returns to set point.

The PROBE FAIL alarm indicator, DS7 and U2, flashes and a continuous audible alarm sounds to indicate an open probe, shorted probe, unplugged probe, or skin temperature above 39.0 ± 0.5 °C. After a 15-second delay, the heater is shut down. After the condition is corrected, the RESET button must be depressed to turn off the indicator, silence the alarm, and restore heater power.

The POWER FAIL alarm indicator, DS9 and Q2, lights continuously and an audible alarm occurs when there is a loss of power. The circuit is powered by a battery, BT1, in the Power Module. The alarm is self-resetting with the resumption of power.

MEASUREMENT/DIGITAL BOARD – PCB2

ANALOG SECTION

The analog section of PCB2 consists of six separate circuits. Refer to Figure 7.3.

The first circuit is the patient probe thermistor amplifier, U1 pins 1, 2, and 3. This is a nonlinear inverting circuit which combines the temperature versus resistance characteristic of the patient probe thermistor (T1) with a fixed reference voltage to produce an almost perfectly linear voltage versus temperature output. The output voltage is fed to J2-14 and rises nominally 200 mV/ °C from 0-volts at 20.0 °C to 4.0 volts at 40.0 °C.

The output of the thermistor amplifier is fed to the probe fail limit comparators, U3, pins 10, 11, 13, and U3 pins 8, 9, and 14. These comparators form a window comparator whose output is high as long as the output of the thermistor amplifier is less than 3.8 volts and greater than -5.0 volts. If the output of this circuit goes low, due to an open probe, shorted probe, unplugged probe, or a probe temperature above 39.0 °C, a PROBE FAIL signal is generated at J2-6.

The set point D to A converter, U1 pins 5, 6, and 7, senses the setting of the thumbwheel switch assembly S4 on PCB1 (refer to Figures 7.2 and 7.5). Switch S4 has a network of binary weighted resistors connected to +5.0 Vdc, and as the number dialed into the thumbwheels is increased, more resistors are connected in parallel with +5 Vdc to J2-1. Therefore, increasing the set point causes a voltage that increases in a negative direction at U1-7.

The set point voltage and the voltage representing temperature are combined in the deviation amplifier, U2 pins 5, 6, and 7. This amplifier sums the voltages and produces an output proportional to set point minus temperature. With the set point fixed, as temperature decreases, the difference voltage at J2-7 increases.

This voltage also feeds a set of limit comparators, U3 pins 1, 6, 7, and U3 pins 2, 4, and 5. This circuit produces a low output at J2-20 if the measured temperature is 0.5 °C below set point, or a low output at J2-24 if the measured temperature is 0.5 °C above set point.

The last analog section is a buffer, U2 pins 1, 2, 3, and associated components. The input is taken from the manual heater control on the display board, PCB1, and the output is fed back to the control board PCB3 where a slide switch selects skin or manual control.

DIGITAL SECTION

The digital logic section is run synchronously by master clocks 0/1 (1 Hz) and 0/2 (1/2 Hz). These signals are generated by U6A and U8A, respectively. Since these clocks are vital to the functioning of the unit, a "dead man" timer formed by U20 pins 8 through 12 detects the absence of a clock signal and activates the audio alarm trigger U6B if the clock signal is not present.

If the silence/reset circuit malfunctions, a continuous audible alarm will sound after a 15-second delay. The alarm will also sound if the SILENCE/RESET switch is held depressed for more than 15 seconds. The signal that triggers the alarm is generated by U9-B which is configured as 15-second timer.

Most of the digital circuitry is involved in the start up test sequence. When power is applied, the start up sequence is coordinated by U15, a one of eight decoder. The start up proceeds as follows:

1. **THE DISPLAY TEST** pin (J2-8) goes high, turning on all the segments in the temperature display.
2. **ANALOG SWITCH U4** is used to simulate an open probe, turning on the probe fail (J2-6 and 27), set point fail (J2-28), low temp. alarm (J2-20), heater power display, and audio (J2-29) alarms; this condition is reset.

3. **ANALOG SWITCH U4** is then used to simulate a shorted probe. This turns on the high temp. (J2-24), probe fail (J2-6 and 27), set point (J2-28), and audio (J2-29) alarms; this alarm is also reset.
4. **THE POWER UP SEQUENCE GENERATOR (U15)** then latches itself in the last state and the unit will function normally.

In the normal (non-start up) mode, any alarm condition (except clock fail) must exist for about 15 seconds before alarms will be activated. This function is performed by U9A and associated components.

When a low temp. alarm is sounded, depressing the silence/reset button will silence the alarm from sounding for 15 minutes by activating counter U10. This circuit will not silence a high temp. alarm.

In addition to the solid state relay which controls the heater power in operation, a safety interlock mechanical relay is powered by U18, pin 4. This relay provides a redundant means of cutting off power in the event of an alarm. This circuit also ensures that the heater power lights are off in this instance (U4 pins 1 and 2).

The logic used to turn the set point and probe fail indicators on comprises U7A and B and associated components; the lights are caused to flash by clock signal 0/2 (J2-26).

Finally, the circuit formed by U6B, U12-U14, U16-U18 is used during the manual mode. When first switched into the manual mode, the manual lamp flashes. After nominally 10 minutes, J2-29 is pulsed high for 1 second by U6-B every 30 seconds, causing a short beep. After five additional minutes, the manual light and the audible alarm are activated continuously and heater power is disconnected by U18.

CONTROL BOARD – PCB3

CONTROL VOLTAGE LIMITER

The function of the voltage limiter is to limit maximum heater output power to approximately 560 watts. As line voltage rises, the power available from the heater goes up by the square of the voltage. The limiter prevents the power from going over the 651 watt limit. Refer to Figure 7.4.

A portion of the unregulated +20 Vdc supply is fed to buffer U1 pins 5, 6, and 7. The output of the buffer is fed to the minus (–) input of summing amplifier U1 pins 1, 2, and 3. The voltage at the plus (+) input (U1-3) is a precision voltage set by the Duty Cycle Limit Adjust control, R6, during calibration. The output of the summing amplifier (U1-1) is fed to a clamp circuit (U1 pins 9, 10, 11, and CR1) which prevents the voltage on J3-12 from rising above the voltage on U1-10. As long as the voltage at J3-12 is less than the voltage at U1-10, the clamp circuit has no effect on operation and the voltage on TP2 (J3-26) equals the voltage on J3-12. At this point, –2.7 volts equals 0% duty cycle and +1.8 volts equals 100% during cycle.

CONTROL AMPLIFIER

The signal CONT.–INPUT on J3-12 represents a weighted error signal (set point temperature). This error signal is applied to a control amplifier, U1 pins 12, 13, and 14.

The error signal at the output of the control amplifier (U1-14) is applied to the minus (–) input of a proportional amplifier (U2-9). At this point, the error signal is inverted and summed with an adjustable offset voltage established at U2-10 by the setting of the Duty Cycle Adjust control R14 which sets the zero reference of the duty cycle controller. The error signal is also ac coupled to an amplifier (U2, pins 12, 13, and 14) which produces a signal proportional to the rate of change of the error signal.

The output signals at U2-14 and U2-8 are summed together by R11/R17 and amplified by U2, pins 5, 6, and 7. At TP3 (J3-26), approximately 0.2 volts equals 0% duty cycle and approximately –1.6 volts equals 100% duty cycle.

DUTY CYCLE CONTROLLER

The duty cycle controller is formed by U2, pins 1, 2, and 3 and associated components. As the voltage on U2, pin 7 decreases, the duty cycle at U2, pin 1 increases. The output of the controller is fed to Q1, which drives the solid state relay (SSR) K2 in the power module.

MOTHER BOARD – PCB4

Refer to Figure 7.5. The mother board provides the means for power and signal distribution to PCB1 (J1), PCB2 (J2), PCB3 (J3), set-point switch (J7), and skin probe (J5). A ribbon cable connected to J4 provides the interconnections between the controller and power module.

A thumbwheel switch assembly is connected to J7. Resistors R1 through R8 are used in conjunction with the set-point switch assembly to develop the proper resistance value necessary for PCB2 circuitry.

During normal operation, the audible alarm (DS1) is not driven by the free running oscillator (U1) due to clamping action of peripheral driver (U2). During alarm conditions, U2 allows U1 and its associated discrete components to drive the piezo electric transducer (DS1). Under power failure conditions, the clamping action of U2 is inoperative and transducer circuitry is powered by a battery.

SECTION 4 PREVENTIVE MAINTENANCE

4.1 GENERAL

This section provides preventive maintenance procedures for the equipment. Included are cleaning instructions, sterilization procedures, and a calibration schedule.

WARNING:

- If oxygen delivery equipment is being used with the equipment, make sure that the oxygen supply to the equipment is turned off and that it is disconnected from the oxygen supply when performing cleaning and maintenance procedures; a fire and explosion hazard exists when performing cleaning and/or maintenance procedures in an oxygen enriched environment.
- An electric shock hazard exists when performing cleaning and maintenance procedures; make sure that the power cord is disconnected from the wall receptacle.

4.2 CLEANING

When an infant is discharged, or at least once a week, the equipment should be thoroughly disinfected. Cleaning of the Infant Intensive Care System and Wall Mounted Infant Intensive Care System can most effectively be accomplished by disassembling, then grouping the parts and/or assemblies in categories according to the method of cleaning required. The Free Standing and Wall Mounted Infant Warmers need not be disassembled for cleaning.

4.3 DISASSEMBLY FOR CLEANING

4.3.1 DISASSEMBLY AND REMOVAL OF BASSINET

1. **TILT THE BASSINET** to the Fowler position as shown in Figure 4.1.

NOTE: The side, front, and back panels of the Bassinet are mounted identically; therefore, the procedure for removing any or all of these panels is the same.

2. **RAISE THE PANEL** (Figure 4.2) and swing the panel away from the Bassinet.
3. **REMOVE THE PANEL** (Figure 4.3) by grasping the ends of the panel and raising one end of the panel until it snaps free of the detent in the corner mount; slide the other end of the panel out of the corner mount.
4. **REMOVE THE MATTRESS** from the Bassinet.

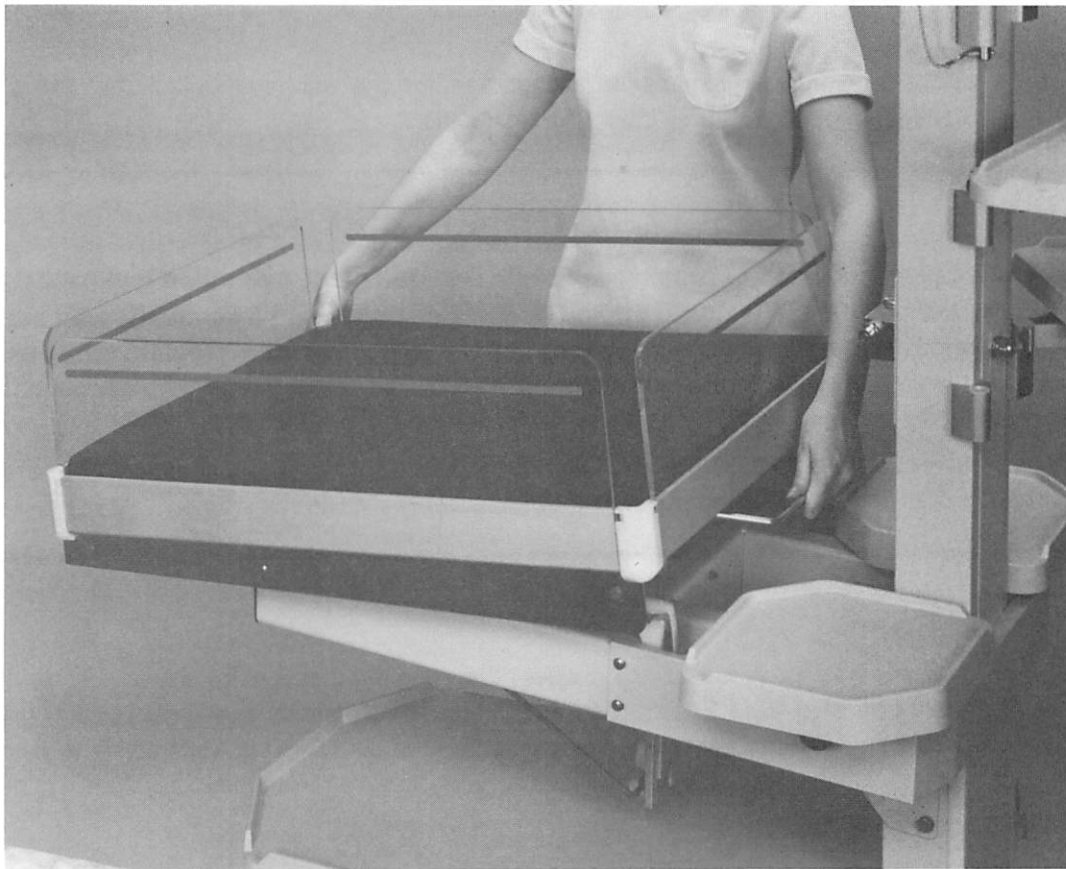


FIGURE 4.1 TILTING BASSINET

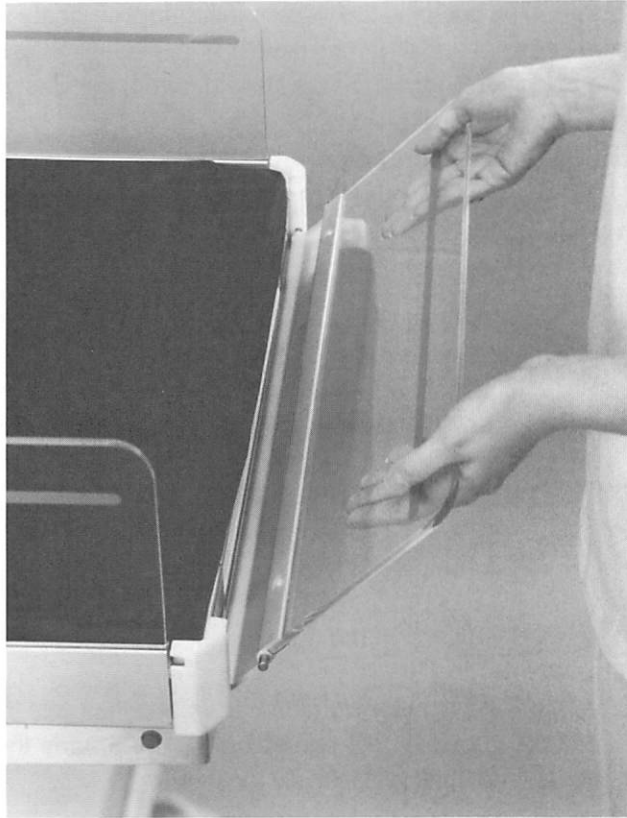


FIGURE 4.2 RAISING SIDE AND END PANELS

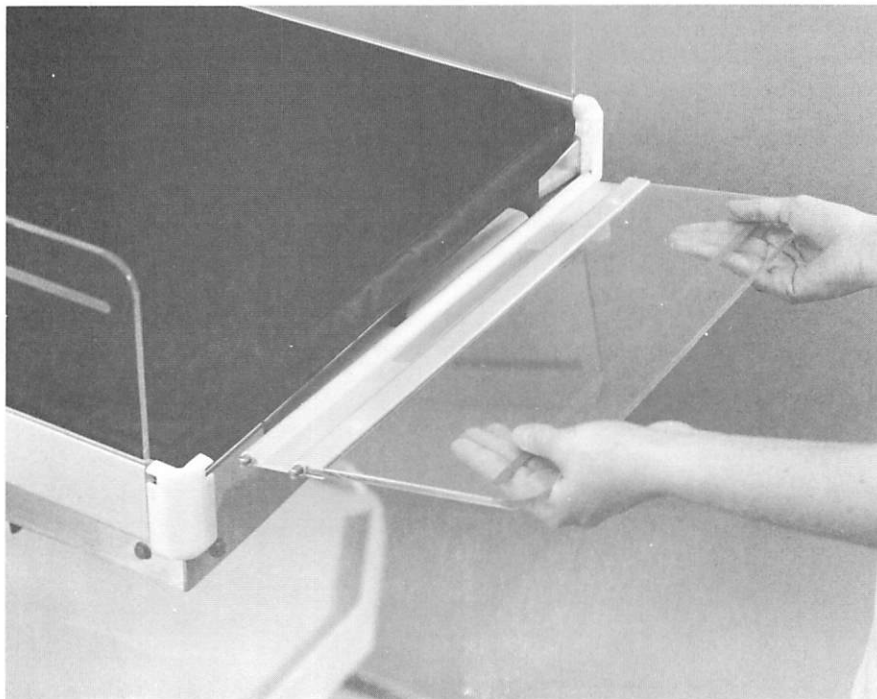


FIGURE 4.3 REMOVING SIDE AND END PANELS FROM BASSINET

4.3.3 REMOVAL OF MONITOR SHELVES (ACCESSORY)

1. **REMOVE ANY MONITOR SHELF** (Figure 4.7) from the Post by lifting up on the shelf to remove the swivel pin from the bearing mount on the Post.
2. **REPLACE ANY MONITOR SHELF** by reversing the above procedure.

4.3.4 REMOVAL OF INSTRUMENT TRAYS

To remove either of the Instrument Trays, refer to Figure 4.8 and proceed as follows:

1. **LOOSEN THE RETAINING KNOB** that secures the instrument Tray to the Instrument Tray Support.
2. **PULL OUT ON THE TRAY** to release it from the Post and lift the Tray up to remove.
3. **REPLACE THE INSTRUMENT TRAY** by reversing the above procedure.

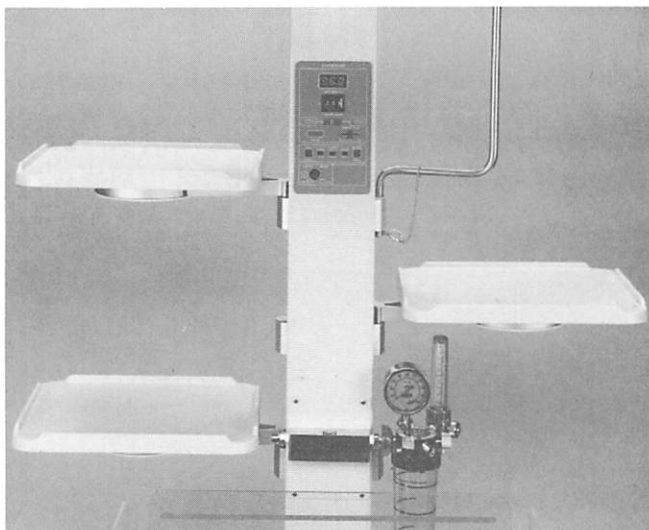


FIGURE 4.7 REMOVAL OF MONITOR SHELVES (ACCESSORY)

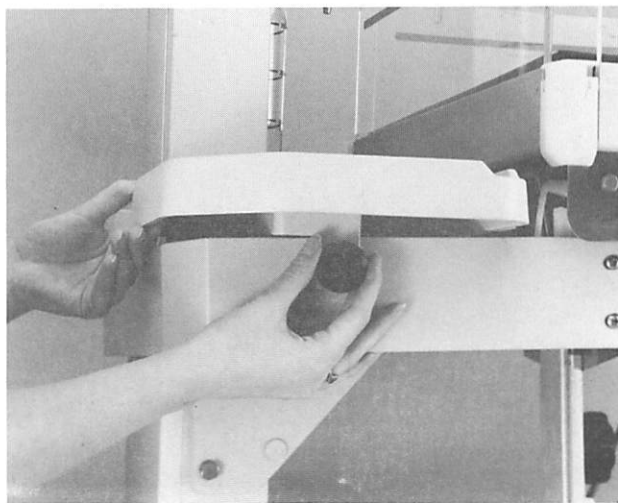


FIGURE 4.8 REMOVAL OF INSTRUMENT TRAY

4.4 CLEANING PROCEDURES

When an infant is discharged, or at least once a week, the equipment should be thoroughly cleaned and disinfected.

4.4.1 CLEANING AGENTS

An iodophor or quaternary disinfectant–detergent registered by the U.S. Environmental Protection Agency should be used, but only after the equipment is disassembled as described elsewhere in this section. A cleanser such as Air-Shields Kleenaseptic® Germicidal Surface Cleanser may be used. When using any cleaning agent, follow the manufacturer's directions for use. Before cleaning, remove all solid wastes and contaminants from the disassembled parts.

4.4.2 PAINTED SURFACES

Use a disinfectant–detergent to clean all surfaces thoroughly, then dry with a clean cloth or paper towel.

4.4.3 CLEAR PLASTIC AND ACRYLIC SURFACES

CAUTION:

- **Alcohol can cause crazing of plastic and acrylic. Do not use alcohol, acetone, or any organic solvents for cleaning.**
- **Do not expose plastic and acrylic to direct radiation from germicidal lamps. Ultraviolet radiation from these sources can cause cracking and crazing of clear plastic and acrylic.**

Use a disinfectant–detergent to clean all surfaces thoroughly. Make sure to clean all holes, indentations, baffles, etc., then dry with a clean cloth or paper towel.

4.4.4 METAL SURFACES

Use a disinfectant–detergent to thoroughly clean all surfaces, then dry with a clean cloth or paper towel.

IMPORTANT: After cleaning, a complete operational checkout (paragraph 2.6) should be performed before returning the unit to service.

4.4.5 SKIN PROBE (REUSABLE PROBES ONLY)

CAUTION: Do not pull on the tip of the skin probe when cleaning or drying; damage to the skin probe may result.

Use a disinfectant–detergent to thoroughly clean all surfaces, then dry with a clean cloth or paper towel.

4.4.6 QUARTZ HEATING ELEMENT

Clean thoroughly with alcohol.

4.5 STERILIZATION

CAUTION: DO NOT STEAM AUTOCLAVE. Gas sterilization temperature should not exceed 54.4 °C (130 °F).

IICS PREVENTIVE MAINTENANCE

Sterilization can be accomplished with the following agents:

1. **COLD STERILIZATION**
2. **GAS STERILIZATION (ETHYLENE OXIDE).** Prior to gas sterilization, the equipment should be thoroughly cleaned as described elsewhere in this section. Remove and discard all used disposable elements. New disposable elements should be installed after sterilization.

Standard gas sterilization procedures as programmed by automatic equipment such as made by American Sterilizers and Wilmot Castle are satisfactory as these do not normally exceed 54.4 °C (130 °F).

IMPORTANT: After sterilization, a complete operational checkout should be performed before returning the unit to service.

4.6 CALIBRATION SCHEDULE

It is recommended that the Controller and Power Module be tested and calibrated at least every four to six months and after repairs have been made. Calibration and test procedures are provided in Section 5 of this manual.

SECTION 5 SERVICE

5.1 GENERAL

This section provides calibration, troubleshooting, and removal and replacement instructions for the equipment.

5.2 TEST AND CALIBRATION PROCEDURES

5.2.1 GENERAL

This paragraph provides calibration and test procedures for the equipment. Unless otherwise indicated, all test and calibration procedures are performed under the following conditions:

IMPORTANT:

- Systems with Series 00 Power Modules: The test and calibration procedures must be performed when either the Power Module or Controller is repaired or replaced. The only exception to this rule is when the two units are replaced with a set of units known to have been calibrated as a matched pair.
 - Systems with Series 01 Power Modules: The Controllers and Power Modules in these systems may be interchanged without recalibration if the Controller had originally been calibrated to operate with a Series 01 Power Module; otherwise, recalibration is required.
1. **THE EQUIPMENT IS CONNECTED TO A PRIMARY POWER SOURCE** of the correct voltage and frequency. (Refer to data tags.)
 2. **AMBIENT TEMPERATURE FOR TEST** and calibration is $24.0^{\circ}\text{C} \pm 3.0^{\circ}\text{C}$ ($75.0^{\circ}\text{F} \pm 5.0^{\circ}\text{F}$).

5.2.2 TEST EQUIPMENT REQUIRED

The following test equipment is required for test and/or calibration. Equivalent test equipment may be substituted.

- Variac – General Radio Model W5MT3A (100V and 110/120V models)
- Variac – General Radio Model W20HMT3A (220/240V models)
- Digital Voltmeter – Fluke 8000A
- Extender Board – Air-Shields Part No. 78 319 70
- Oscilloscope – Tektronix 561A
- Extension Ribbon Cable – Air-Shields Part No. 78 319 20
- Probe Simulator – Air-Shields Part No. 68 900 80

NOTE: Probe Simulator Part No. 68 900 80 is also used for test and calibration of the Model C100 Infant Incubator.

5.2.3 POWER MODULE CALIBRATION PROCEDURE

IMPORTANT: This calibration procedure applies only to the Series 01 Power Module. The Series 00 Power Module has no adjustments.

TEST HOOKUP

1. **REMOVE THE POWER MODULE** from the Warmer Housing (refer to paragraph 5.4.2 and Figure 5.1).
2. **REFER TO FIGURE 7.1A** and connect jumper wires to the Power Module as follows.

J2-9 to J2-21

J2-7 to J2-19

J2-11 to J2-23

This replaces the connections normally supplied by the WARMER switch.

3. **CONNECT LINE VOLTAGE TO THE POWER MODULE** using a Variac, Adjust the input voltage as follows:

110/120V Power Module; 115 VAC $\pm$ 1.0 VAC

220/240V Power Module; 230 VAC $\pm$ 1.0 VAC

100V Power Module; 100 VAC $\pm$ 1.0 VAC

PROCEDURE

1. **CONNECT A DIGITAL VOLTMETER** between TP1 and TP4 (ground) and adjust R6 for a reading of $+12.6V \pm 50$ mV.
2. **CONNECT A DIGITAL VOLTMETER** between TP2 and TP4 (ground) and adjust R9 for a reading of $+5.0V \pm 50$ mV.
3. **CONNECT A DIGITAL VOLTMETER** between TP3 and TP4 (ground) and adjust R12 for a reading of $-12.0V \pm 50$ mV.
4. **REINSTALL THE POWER MODULE** in the Warmer Housing.

5.2.4 CONTROLLER CALIBRATION PROCEDURE

IMPORTANT:

- When calibrating the Controller, all adjustment procedures must be performed in the order given to obtain correct results.
- If any procedure cannot be completed, refer to the appropriate troubleshooting information given in paragraph 5.3.

TEST HOOKUP

1. **REMOVE THE CONTROLLER** from the Mounting Post (refer to paragraph 5.4.3).
2. **REMOVE PCB3** from the Controller and reinstall using Extender Board, Part No. 78 319 70 to provide access to test points and adjustments.
3. **USING EXTENSION RIBBON CABLE**, part no 78 319 20, reconnect the Controller to the interconnecting ribbon cable (item 2, Figure 5.2).
4. **CONNECT THE PROBE SIMULATOR** part no. 68 900 80 to the PATIENT PROBE jack on the Controller.

5. **CONNECT LINE VOLTAGE** to the Power Module using a Variac. Adjust the line voltage as follows:

110/120V Power Module; 115 VAC $\pm$ 1.0 VAC

220/240V Power Module; 230 VAC $\pm$ 1.0 VAC

100V Power Module; 100 VAC $\pm$ 1.0 VAC

6. **SET THE WARMER SWITCH** on the Warmer Housing to the ON-1 position.

ANALOG CALIBRATION

1. CONTROL VOLTAGE ADJUSTMENT

- A. Set the CONTROL MODE switch on the Controller to SKIN position, the SKIN indicator should light.
- B. Set the SKIN TEMP. °C thumbwheel switches on the Controller to 36.0 °C.
- C. Set the control switch on the Probe Simulator to SKIN and the °C switch to 36.0 °C.
- D. Connect a digital voltmeter to J3-12 on PCB3 (Figure 5.2); the ground connection is J3-3,4.
- E. Adjust potentiometer R2 on PCB2 (Figure 5.2) until the digital voltmeter reads 0.0 ± 0.05 VDC.

DISPLAY CALIBRATION

1. OFFSET ADJUSTMENT

- A. Set the CONTROL MODE switch on the Controller to MANUAL position, the MANUAL indicator should flash continuously.
- B. Set the °C switch on the Probe Simulator to 25.0 °C.
- C. Adjust potentiometer R2 on PCB1 (Figure 5.2) until the digital display indicates 25.0 °C.

2. GAIN ADJUSTMENT

- A. Set the °C switch on the Probe Simulator to 36.0 °C.
- B. Adjust potentiometer R7 on PCB1 (Figure 5.2) until the digital display indicates 36.0 °C.

NOTE: It may be necessary to repeat the Offset and Gain Adjustments to obtain accurate results.

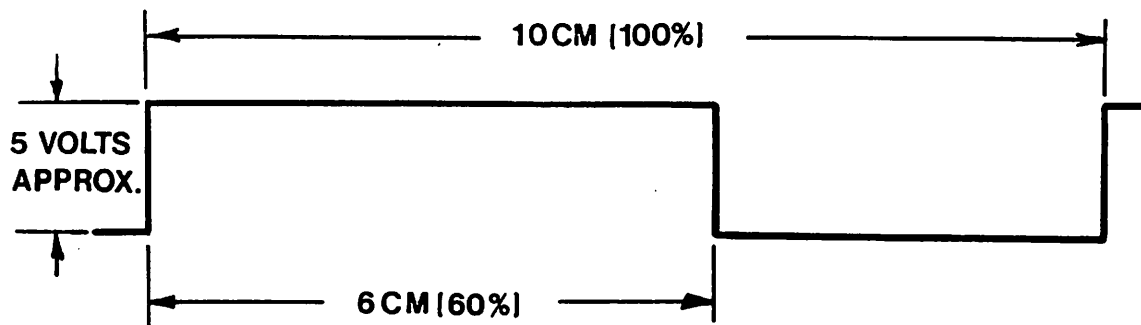
CONTROL CIRCUIT CALIBRATION

1. LINE VOLTAGE ADJUSTMENT

- A. Set the CONTROL MODE switch on the Controller to SKIN position, the SKIN indicator should light.
- B. Set the SKIN TEMP. °C thumbwheel switches on the Controller to 36.4 °C.
- C. Set the °C switch on the Probe Simulator to 36.0 °C.
- D. Connect a digital voltmeter to J3-14 on PCB3 (Figure 5.2); the ground connection is J3-3,4.
- E. Adjust line voltage until digital voltmeter indicates 23.3 ± 0.02 VDC.
- F. Connect a digital voltmeter to J3-25 on PCB3 (Figure 5.2); the ground connection is J3-3,4.
- G. Adjust potentiometer R6 on PCB3 until the digital voltmeter indicates $+1.80 \pm 0.05$ VDC with full heater power.
- H. Readjust the line voltage as follows:
110/120V Models; 115 ± 1.0 VAC
220/240V Models; 230 ± 1.0 VAC
100V Models; 100 ± 1.0 VAC

2. DUTY CYCLE ADJUSTMENT

- A. Set the SKIN TEMP °C thumbwheel switches on the Controller to 36.0 °C.
- B. Connect an oscilloscope to J3-11 on PCB3 and adjust potentiometer R14 on PCB3 (Figure 5.2) for a duty cycle of 60% as shown below.

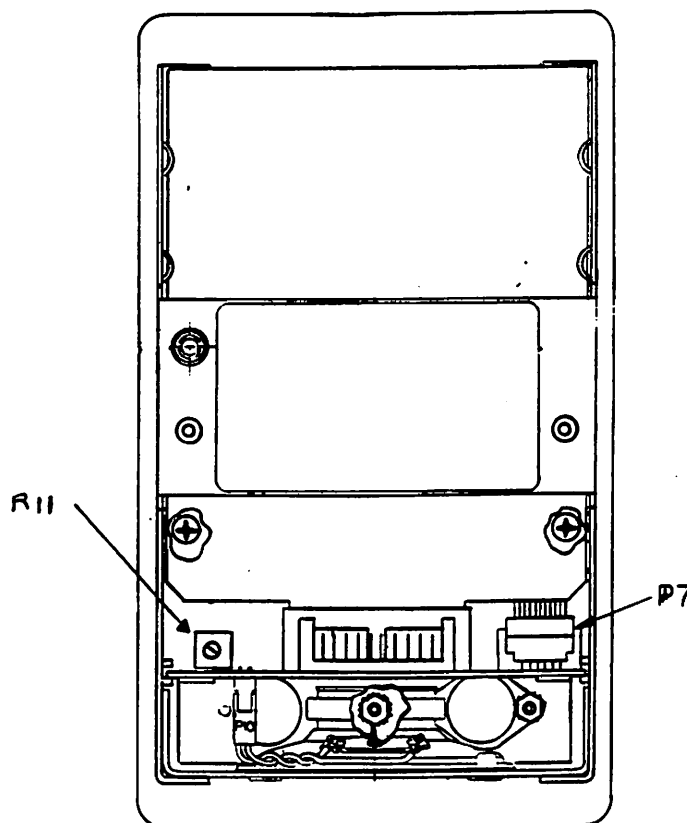


5.2.5 ALARM SOUND LEVEL ADJUSTMENT

The Alarm Sound Level is factory set for a level of 65 dBA minimum. To lower the sound level, proceed as follows:

Equipment required: Sound Level Meter 45–75 dBA Range.

1. Locate the Sound Level Meter 3 meters (11 ft, 9 in) from the front of the Controller and 1.8 meters (7 ft, 1 in) from floor level.
2. Adjust R11 on PCB for the desired sound level.



5. 0 PCB4 MOTHERBOARD ASSEMBLY

5.2.6 PERFORMANCE CHECKS – SKIN CONTROL MODE

TEST CONDITIONS

1. **SET THE WARMER SWITCH** on the Warmer Housing to the OFF–0 position.
2. **REMOVE THE EXTENDER BOARD** from the Controller and disconnect the extension ribbon cable.
3. **REINSTALL PCB3** in the Controller, reconnect the Controller to the Power Module, and reinstall the Controller in the Mounting Post (Figure 5.2).
4. **SET THE CONTROL MODE SWITCH** on the Controller to SKIN position.
5. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C.

6. **CONNECT THE PROBE SIMULATOR**, Part No. 68 900 80 to the PATIENT PROBE jack on the Controller; set the control switch to SKIN and the °C switch to 36.0 °C.

START-UP SEQUENCE

1. **SET THE WARMER SWITCH ON THE WARMER HOUSING** to the ON-1 position.

NOTE: During the automatic test sequence, disregard other extraneous displays or indications which may occur within this sequence.

- A. The SKIN TEMP °C digital display should display all eights (88.8).
- B. All HEATER power indicators should light.
- C. After a short delay, the displays blank, the PROBE FAIL and SET POINT alarm indicators light and the audible alarm sounds and then stops.
- D. After a short delay, the PROBE FAIL and SET POINT indicators light again, the audible alarm sounds, and the HEATER power indicators go out. When the PROBE FAIL and SET POINT alarms stop the automatic test sequence is complete.

SKIN TEMPERATURE DISPLAY

1. **SET THE PROBE SIMULATOR** to 25.0 °C, 36.0 °C and 40.0 °C; the SKIN TEMP °C display should be accurate to within ± 0.1 °C for all settings.
2. **DEPRESS THE CAL CHECK SWITCH**; the SKIN TEMP display should indicate 36.0 ± 0.1 °C to indicate that the unit is calibrated.

HEATER LEVEL

1. **SET THE °C SWITCH ON THE Probe Simulator** to 36.0 °C.
2. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C; two or three HEATER level indicators should be illuminated.
3. **PROBE FAILURE ALARM (SHORTED)**
 - A. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C and the °C switch on the Probe Simulator to 36.0 °C; the digital display should indicate 36.0 °C.
 - B. **SET THE °C SWITCH** on the Probe Simulator to SHORT. The digital display should blank continuously or intermittently.
 - C. **AFTER A 14 to 20 SECOND DELAY**, a continuous alarm should sound, the PROBE FAIL and SET POINT indicators should flash, and HEATER indicators should be off. This alarm condition cannot be reset until the alarm condition is corrected.
 - D. **TO RESET THE CIRCUIT**, set the °C switch on the Probe Simulator to 36.0 °C and depress the SILENCE/RESET switch; the unit should return to normal operating condition.

4. PROBE FAILURE ALARM (OPEN)

- A. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C and the °C switch on the Probe Simulator to 36.0 °C; the digital display should indicate 36.0 °C.
- B. **SET THE °C SWITCH** on the Probe Simulator to OPEN. The digital display should blank continuously or intermittently.
- C. **AFTER A 14 TO 20 SECOND DELAY**, a continuous alarm should sound, the PROBE FAIL and SET POINT indicators should flash, and HEATER indicators should be off. This alarm condition cannot be reset until the alarm condition is corrected.
- D. **TO RESET THE CIRCUIT**, set the °C switch on the Probe Simulator to 36.0 °C and depress the SILENCE/RESET switch; the unit should return to normal operating condition.

PROBE FAILURE ALARM (HIGH SKIN TEMPERATURE (39.0°C))

1. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C and the °C switch on the Probe Simulator to 40.0 °C.
2. **AFTER A 14 TO 20 SECOND DELAY**, a continuous alarm should sound, the SET POINT AND PROBE FAIL indicators should flash, and all HEATER indicators should be off. This alarm condition cannot be reset until the alarm condition is corrected.
3. **TO RESET THE CIRCUIT**, set the °C switch on the Probe Simulator to 36.0 °C and depress the SILENCE/RESET switch; the unit should return to normal operating condition.

HIGH SKIN TEMPERATURE MODEL CM78-1

1. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C, the control switch on the probe simulator to SKIN, and the °C switch on the probe simulator to 36.0 °C; the digital display should indicate 36.0 °C and the alarms should not be activated. Typically, two heater indicators should be lit.
2. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 35.3 °C. All heater indicators should be off.
3. **AFTER A 14 TO 20 SECOND DELAY**, a continuous alarm should sound, and the SET POINT indicator should flash. This alarm condition cannot be reset until the alarm condition is corrected.
4. **TO RESET THE CIRCUIT**, set the SKIN TEMP °C thumbwheel switches on the Controller to 36.0 °C; and depress the SILENCE/RESET Switch; the unit should return to normal operating condition.

HIGH SKIN TEMPERATURE MODEL CM78-2

1. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C, the control switch on the probe simulator to SKIN, and the °C switch on the probe simulator to 36.0 °C; the digital display should indicate 36.0 °C and the alarms should not be activated. Typically, two heater indicators should be lit.
2. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 35.3 °C. All heater indicators should be off.

3. **AFTER A 14 TO 20 SECOND DELAY**, a continuous alarm should sound and the SET POINT indicator should flash.
4. **TO RESET THE CIRCUIT**, set the SKIN TEMP °C thumbwheel switches on the Controller to 36.0 °C; the unit should return to normal operating condition.

LOW SKIN TEMPERATURE

1. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C, the control switch on the probe simulator to SKIN, and the °C switch on the probe simulator to 36.0 °C; the digital display should indicate 36.0 °C and the alarms should not be activated. Typically, two heater indicators should be lit.
2. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.7 °C. All heater indicators should be lit.
3. **AFTER A 14 TO 20 SECOND DELAY**, a continuous alarm should sound and the SET POINT indicator should flash.
4. **DEPRESS THE SILENCE/RESET SWITCH**, the alarm should be silenced but the SET POINT indicator should continue to flash. All heater indicators should be lit.
5. **SET THE SKIN TEMP °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C. The circuit should reset automatically and the SET POINT indicator should turn off. Typically, two heater indicators should be lit.

5.2.7 PERFORMANCE CHECKS – MANUAL CONTROL MODE

STANDARD ALARMS DISABLED CHECK

1. **SET THE CONTROL MODE SWITCH** on the Controller to MANUAL; the MANUAL indicator should flash on and off continuously.
2. **CONNECT THE PROBE SIMULATOR** to the PATIENT PROBE connector on the Controller; set the control switch to SKIN and the °C switch to OPEN. The digital display should show random numbers and blank intermittently or continuously.
3. **WAIT AT LEAST 20 SECONDS**, no visual or audible alarms should occur.

NOTE: The standard alarms (except for POWER FAIL) are disabled when operating in manual mode.

15-MINUTE TIMER CHECK

1. **SET THE CONTROL MODE SWITCH TO SKIN.**
2. **SET THE CONTROL MODE SWITCH TO MANUAL**, the MANUAL indicator should flash on and off continuously indicating that the timer is running; begin measuring elapsed time.

IMPORTANT: If the MANUAL indicator does not flash on and off continuously, the 15-minute timer is inoperative.

3. **AFTER 9 TO 12 MINUTES TOTAL ELAPSED TIME**, a one second duration beep (Manual Alert) should sound every 30 seconds; this indicates that the heater may be reset for an additional 15 minutes without the heater turning off. To check the reset circuitry, proceed as follows:

- A. Depress and hold the SILENCE/RESET switch for at least 2 seconds after the audible signal starts; this will allow time for internal circuitry to reset.
- B. After 9 to 12 minutes total elapsed time, a one second duration beep (Manual Alert) should sound every 30 seconds.
4. **AFTER 13 TO 19 MINUTES ELAPSED TIME**, a steady alarm should sound, the MANUAL indicator should go off and all HEATER indicators should turn off indicating that the manual heating period has ended.
5. **DEPRESS THE SILENCE/RESET SWITCH** for at least 2 seconds; this resets the circuitry and the complete cycle should repeat.

POWER FAILURE ALARM CHECK

1. **DISCONNECT THE POWER CORD** from the wall receptacle or Power Module; the POWER FAIL indicator should light and the alarm should sound continuously.
2. **RECONNECT THE POWER CORD** or set the WARMER ON-OFF switch to the OFF position to terminate the alarm.

5.3 TROUBLESHOOTING

5.3.1 GENERAL

Troubleshooting guides for the equipment are provided in paragraph 5.3.3 in the form of flowcharts. It is assumed that an attempt has been made to calibrate the equipment and that all cables are in good condition.

5.3.2 TEST EQUIPMENT REQUIRED

The test equipment listed below is required for troubleshooting the equipment. Equivalent test equipment may be substituted.

- Variac – General Radio Model W5MT3A (100V and 110/120V models)
- Variac – General Radio Model W20HMT3A (220/240V models)
- Digital Voltmeter – Fluke 8000A
- Extender Board – Air-Shields Part No. 78 319 70
- Oscilloscope – Tektronix 561A
- Extension Ribbon Cable – Air-Shields Part No. 78 319 20
- 2K, 10W resistor (100V and 110/120V models)
- 4K, 10W resistor (220/240V models)
- Probe Simulator – Air-Shields Part No. 68 900 80

NOTE: Probe Simulator Part No. 68 900 80 is also used for test and calibration of the Model C100 Infant Incubator.

5.3.3 TROUBLESHOOTING PROCEDURES

The following flowcharts are provided as an aid in localizing the cause of equipment malfunctions. The charts are intended for use in conjunction with the equipment theory of operation (Section 3) and the schematic diagrams (Section 7). It is assumed that the Operational Checkout Procedure (paragraph 2.5) has been performed, and that the Test and Calibration Procedures (paragraph 5.2.6) have been attempted.

When using the flowcharts, do not skip steps. The flowcharts have been designed to minimize the number of checks required to localize the problem area and isolate the defective component.

If the problem area is known, proceed directly to the appropriate flowchart; however, if the problem area cannot be immediately defined, first perform the Power Module output voltage test that follows.

POWER MODULE VOLTAGE TEST

TEST HOOKUP

1. **REMOVE THE CONTROLLER** from the Mounting Post (refer to paragraph 5.4.3).
2. **REMOVE PCB3** from the Controller and reinstall using Extender Board, Part No. 78 319 70, to provide access to test points and adjustments.
3. **USING EXTENSION RIBBON CABLE**, part no. 78 319 20, reconnect the Controller to the Power Module.
4. **CONNECT THE PROBE SIMULATOR**, part no. 68 900 80, to the PATIENT PROBE jack on the Controller and set the °C switch to 36.0 °C.
5. **SET THE °C THUMBWHEEL SWITCHES** on the Controller to 36.0 °C.
6. **CONNECT LINE VOLTAGE** to the Power Module using a Variac. Adjust the line voltage as follows:
110/120V Power Module; 115 VAC $\pm$ 1.0 VAC
220/240V Power Module; 230 VAC $\pm$ 1.0 VAC
100V Power Module; 100 VAC $\pm$ 1.0 VAC
7. **SET THE WARMER SWITCH** on the Warmer Housing to the ON-1 position.

PROCEDURE

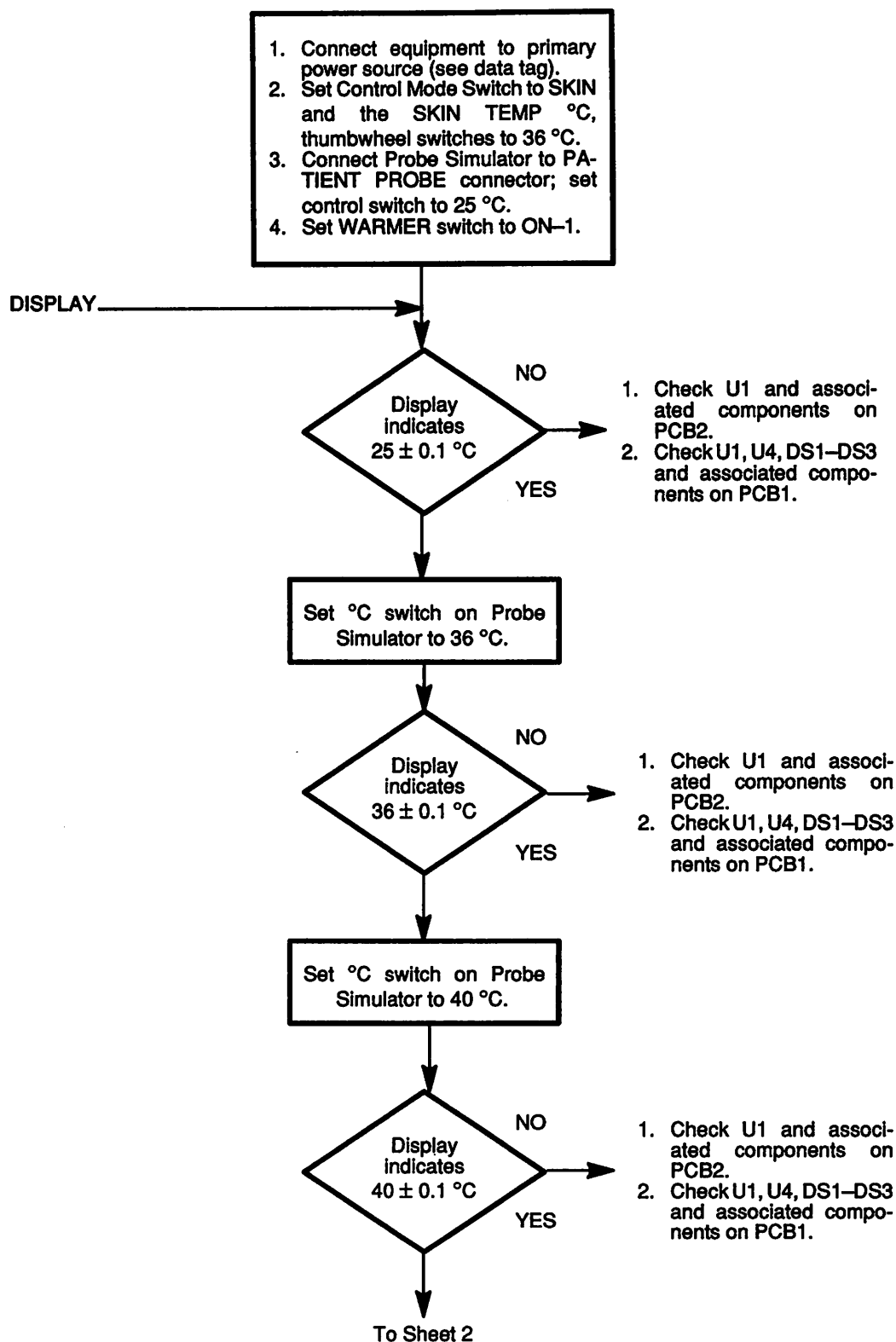
1. **USING A DIGITAL VOLTMETER**, check that the Power Module output voltages are within the limits indicated below. The test points are located on connector J3 of PCB3 in the Controller.

<u>FROM</u>	<u>TO(GND)</u>	<u>VOLTAGE</u>	<u>MAXIMUM RIPPLE P-P</u>
J3-7	J3-3	+5.0 $\pm$ 1.0 VDC	1.0V
*J3-9	J3-3	+12.6 $\pm$ 0.5 VDC	10.0 mV
*J3-9	J3-3	** +12.6 $\pm$ 50 mV	10.0 mV
J3-14	J3-3	+21.0 $\pm$ 1.0 VDC (+18.75 in 220/240V units)	1.5 V
*J3-19	J3-3	-12.0 $\pm$ 0.5 VDC	10.0 mV
*J3-19	J3-3	** -12.0 $\pm$ 50 mV	20.0 mV
*J3-23	J3-3	+5.0 $\pm$ 0.3 VDC	10.0 mV
*J3-23	J3-3	** +5.0 $\pm$ 50 mV	10.0 mV

* Reading must not vary more than 0.2V over following range of applied voltage:

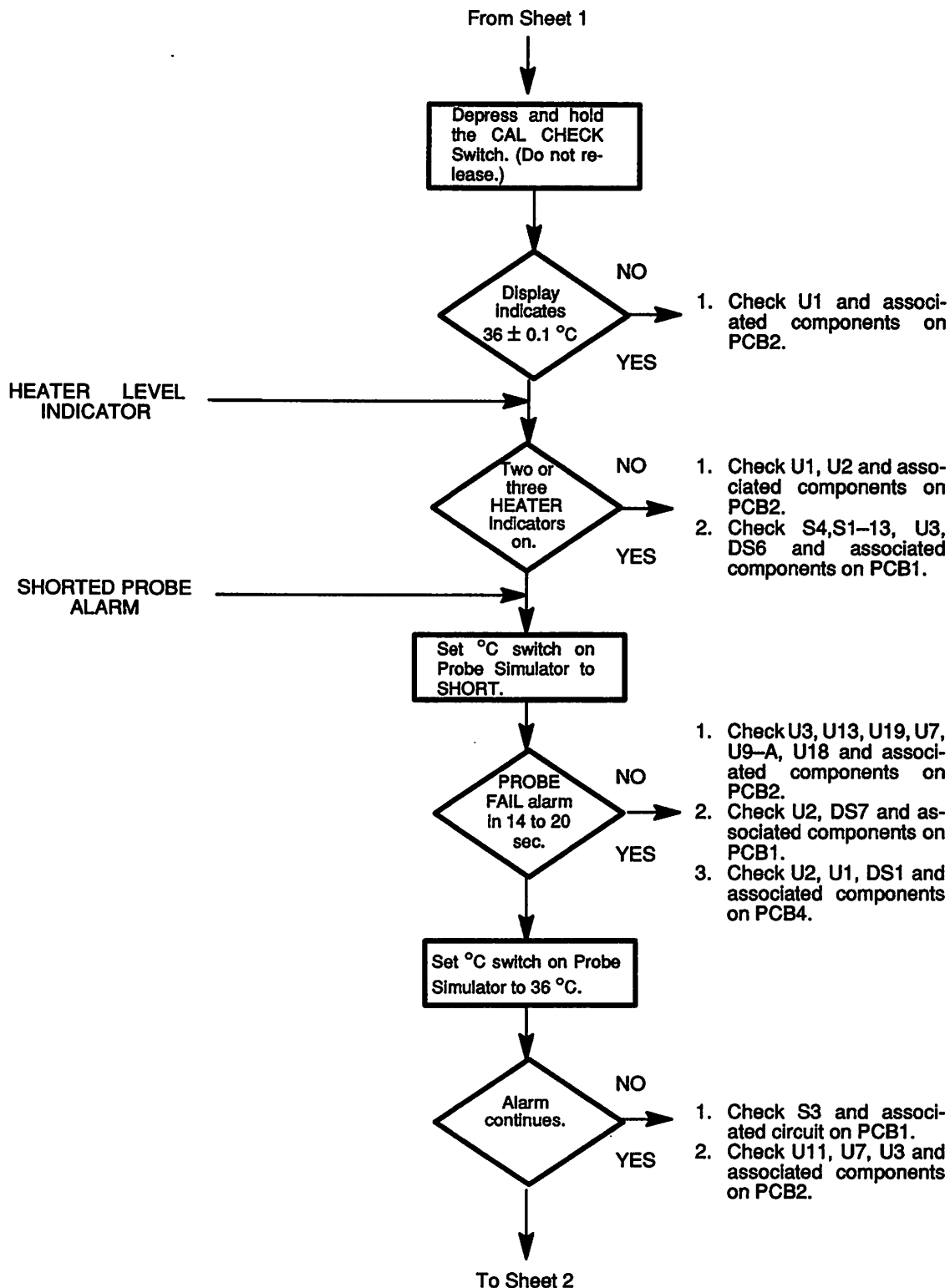
110/120V Power Module; 99 to 132 VAC
220/240V Power Module; 198 to 264 VAC
100V Power Module; 90 to 110 VAC

** Readings obtained when using a Series 01 Power Module.



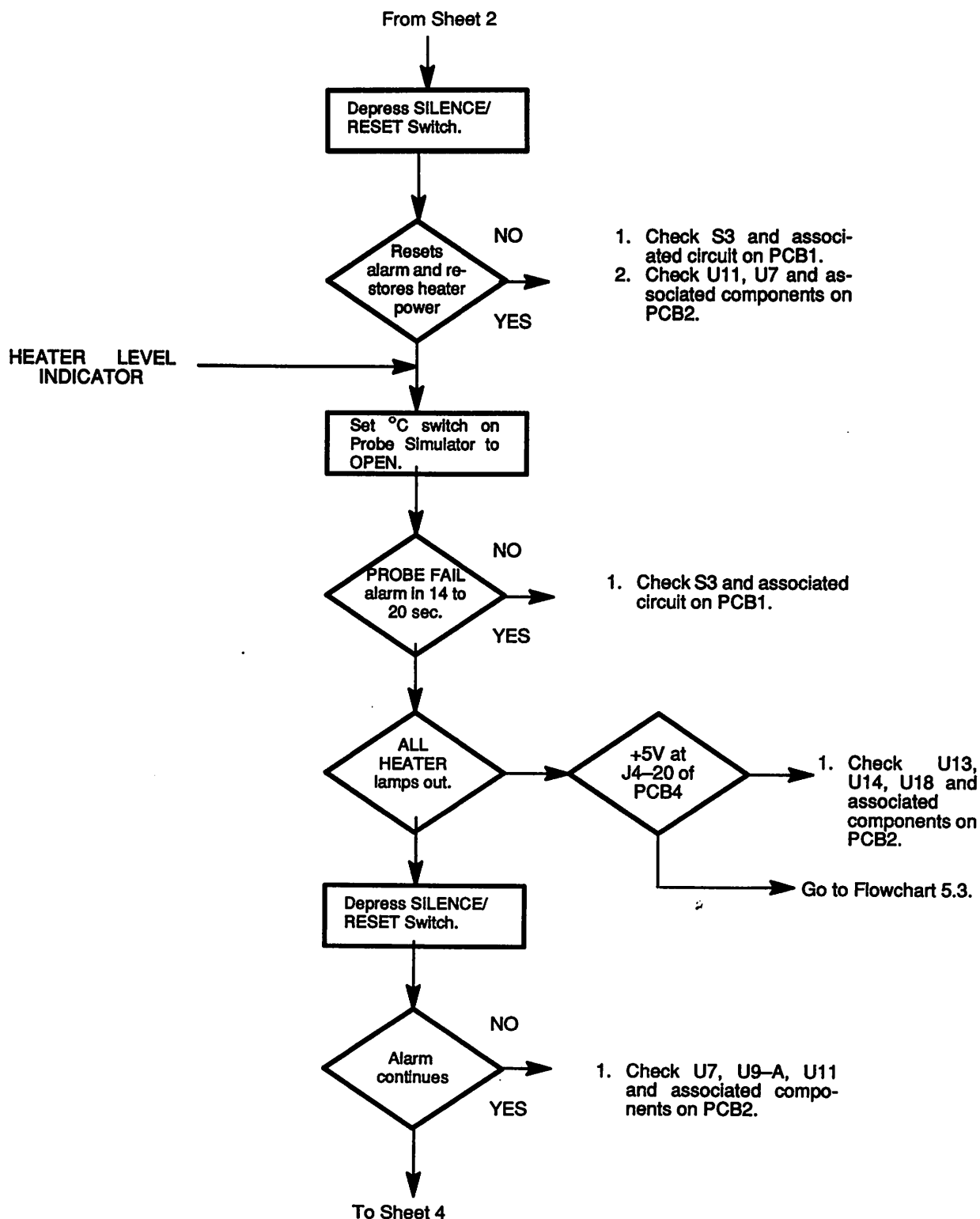
FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 1 of 9)



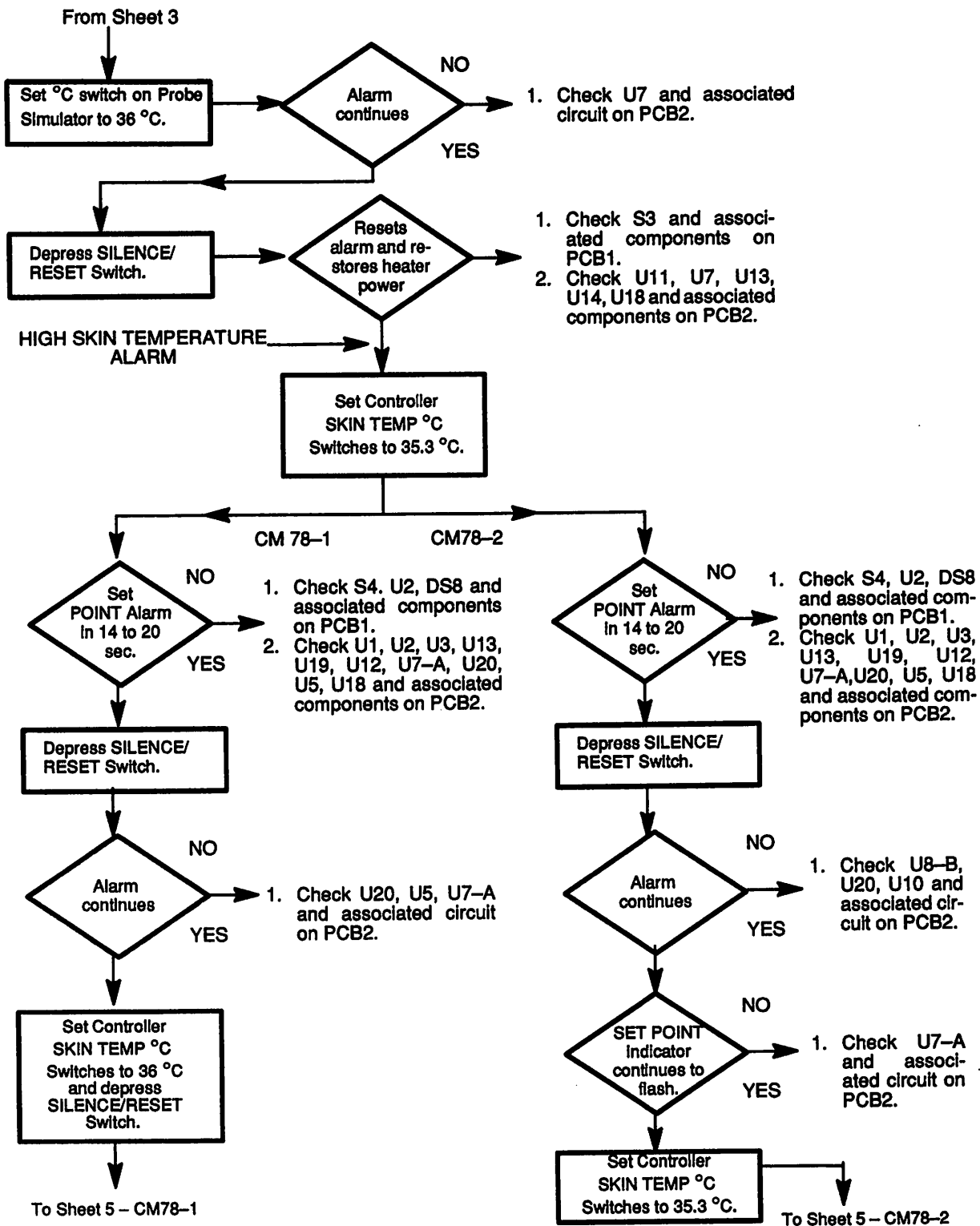
FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 2 of 9)

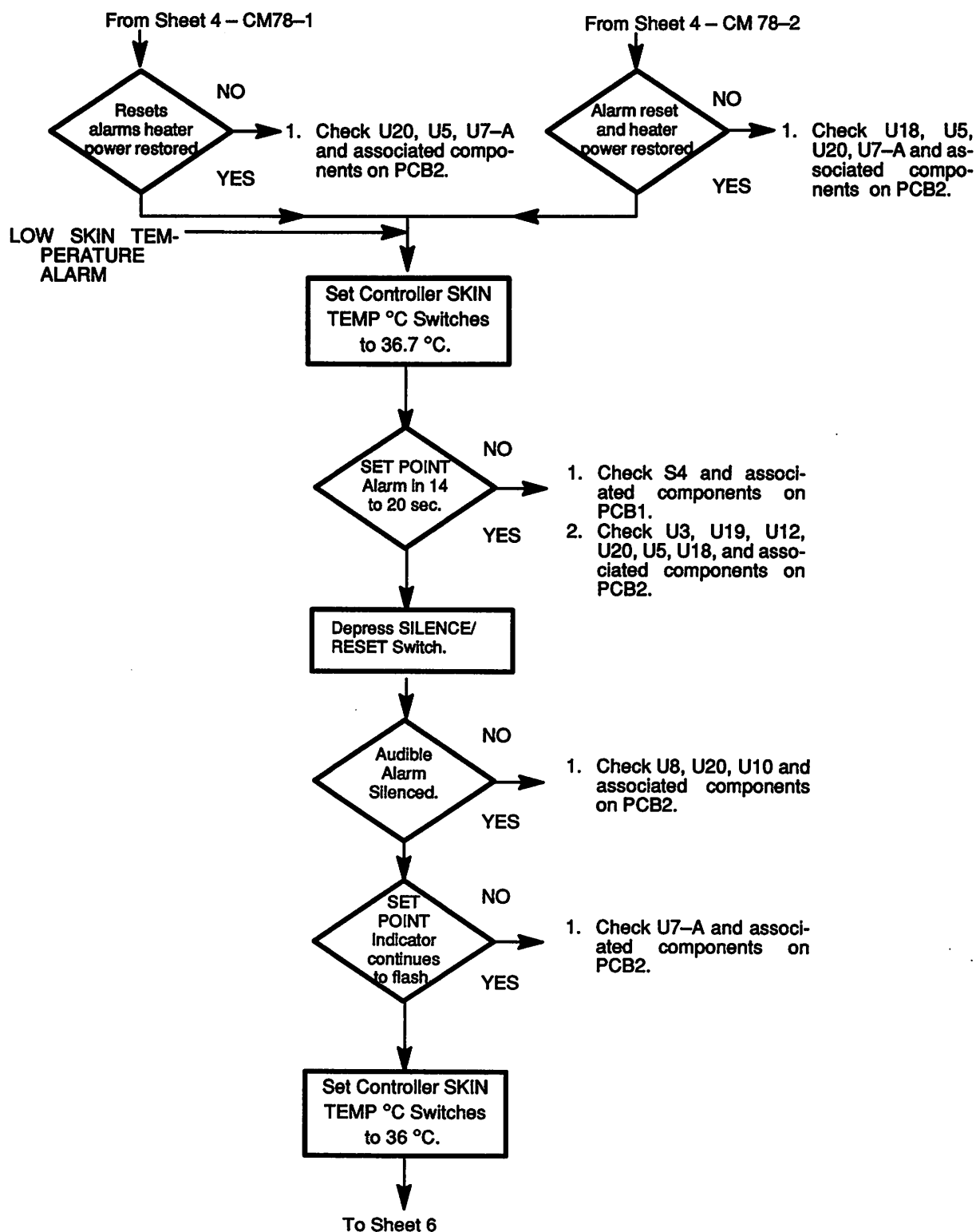


FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 3 of 9)

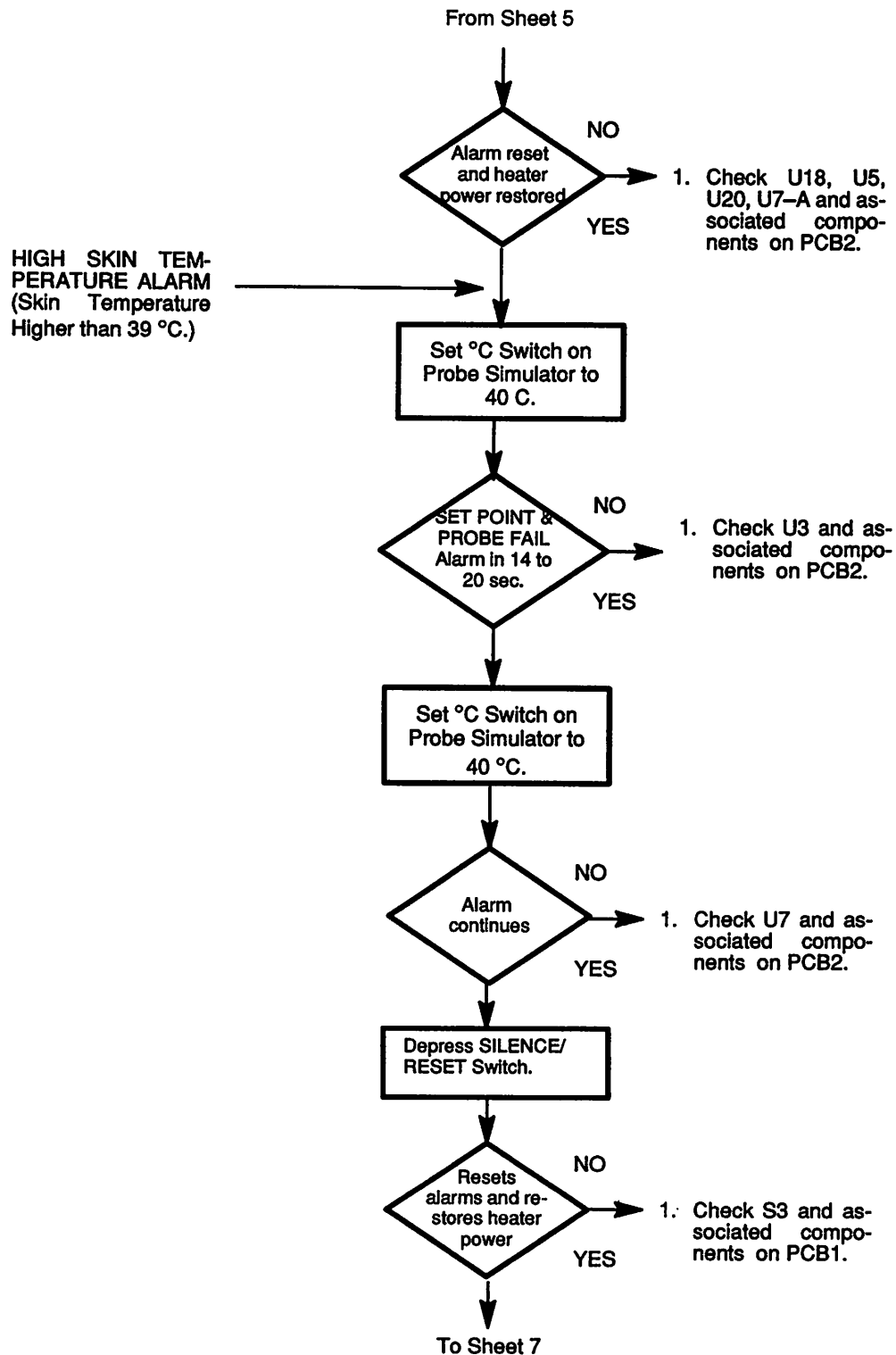


FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING
(Sheet 4 of 9)



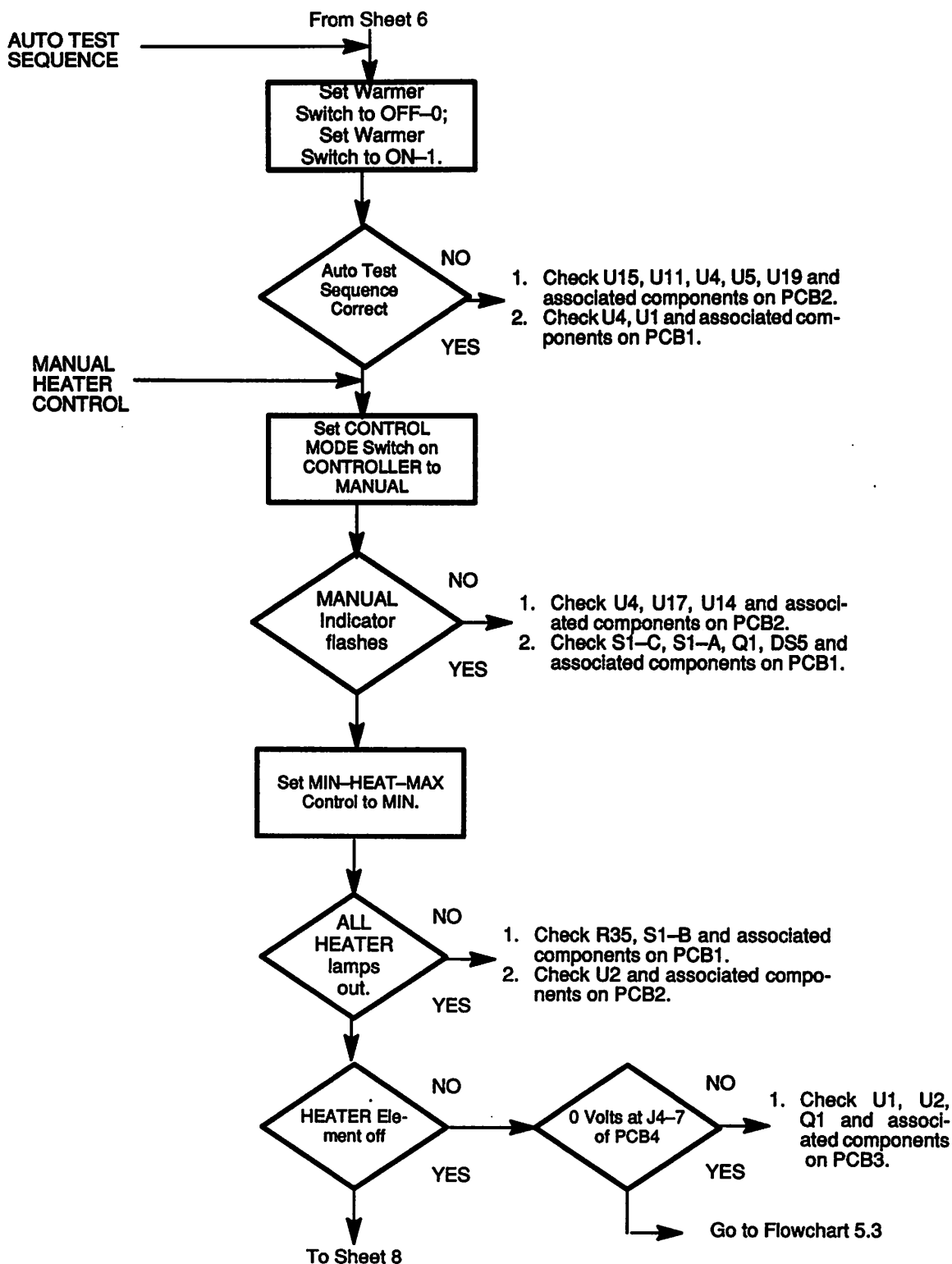
FLOWCHARTS 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 5 of 9)



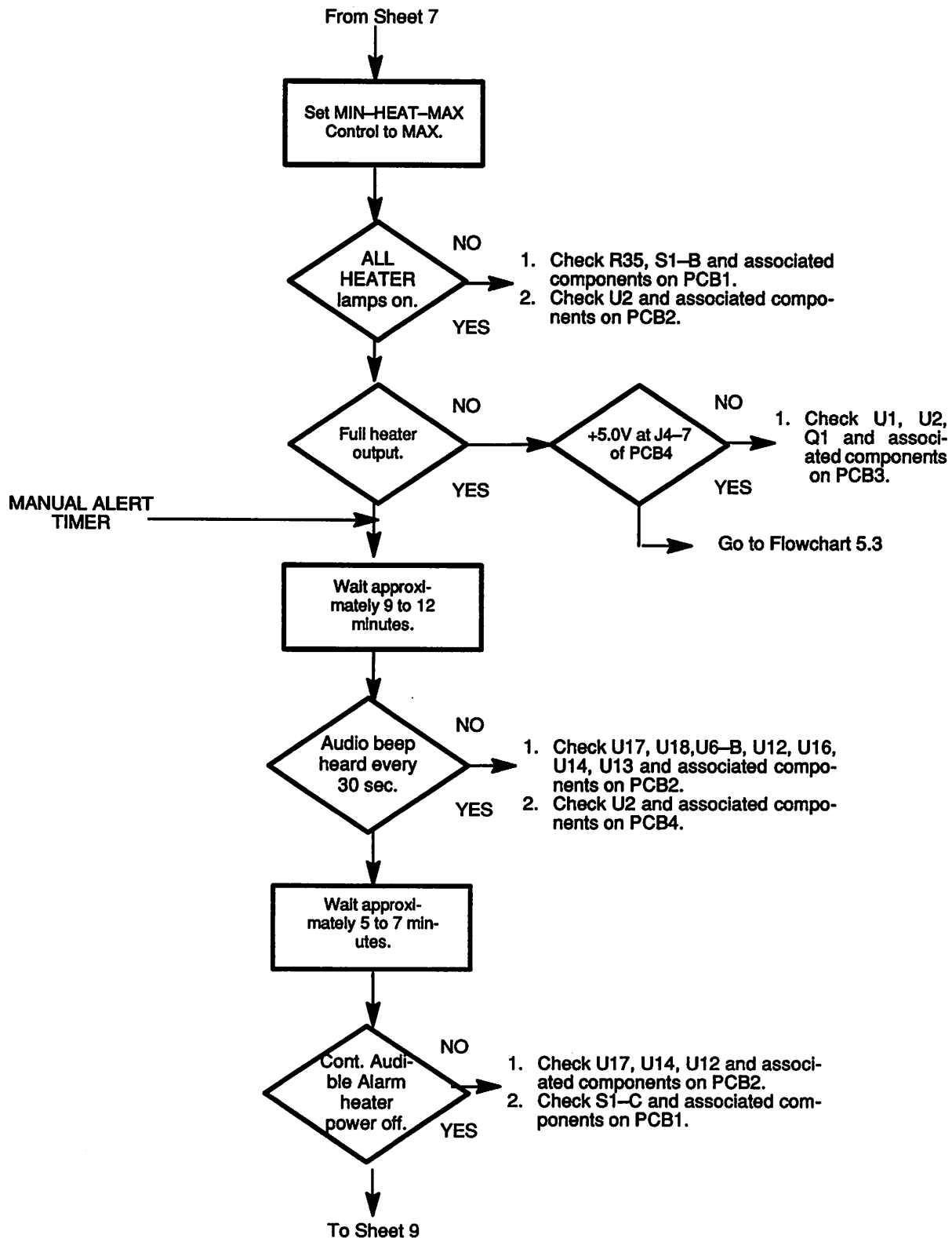
FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 6 of 9)



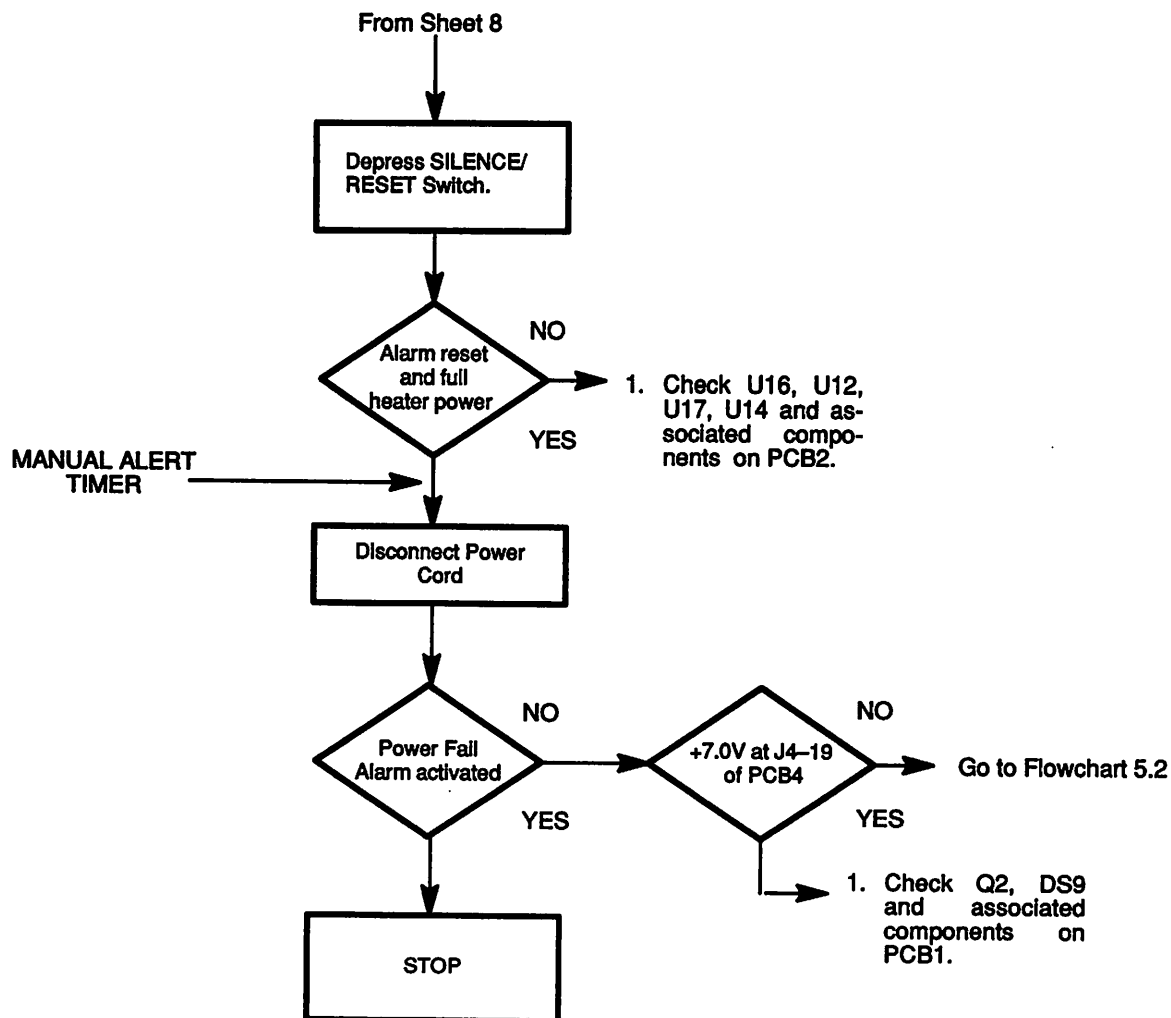
FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

(Sheet 7 of 9)

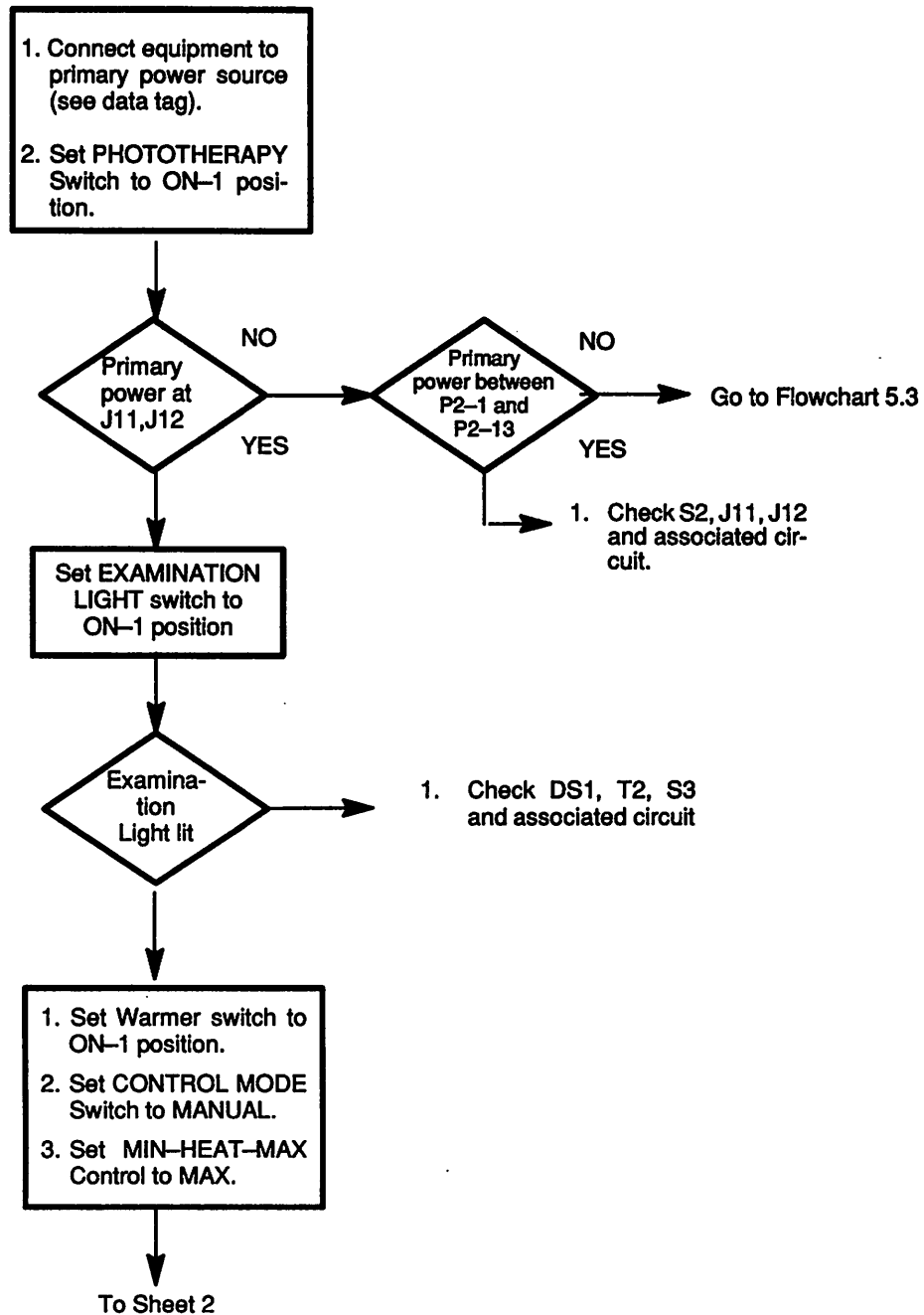


FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING

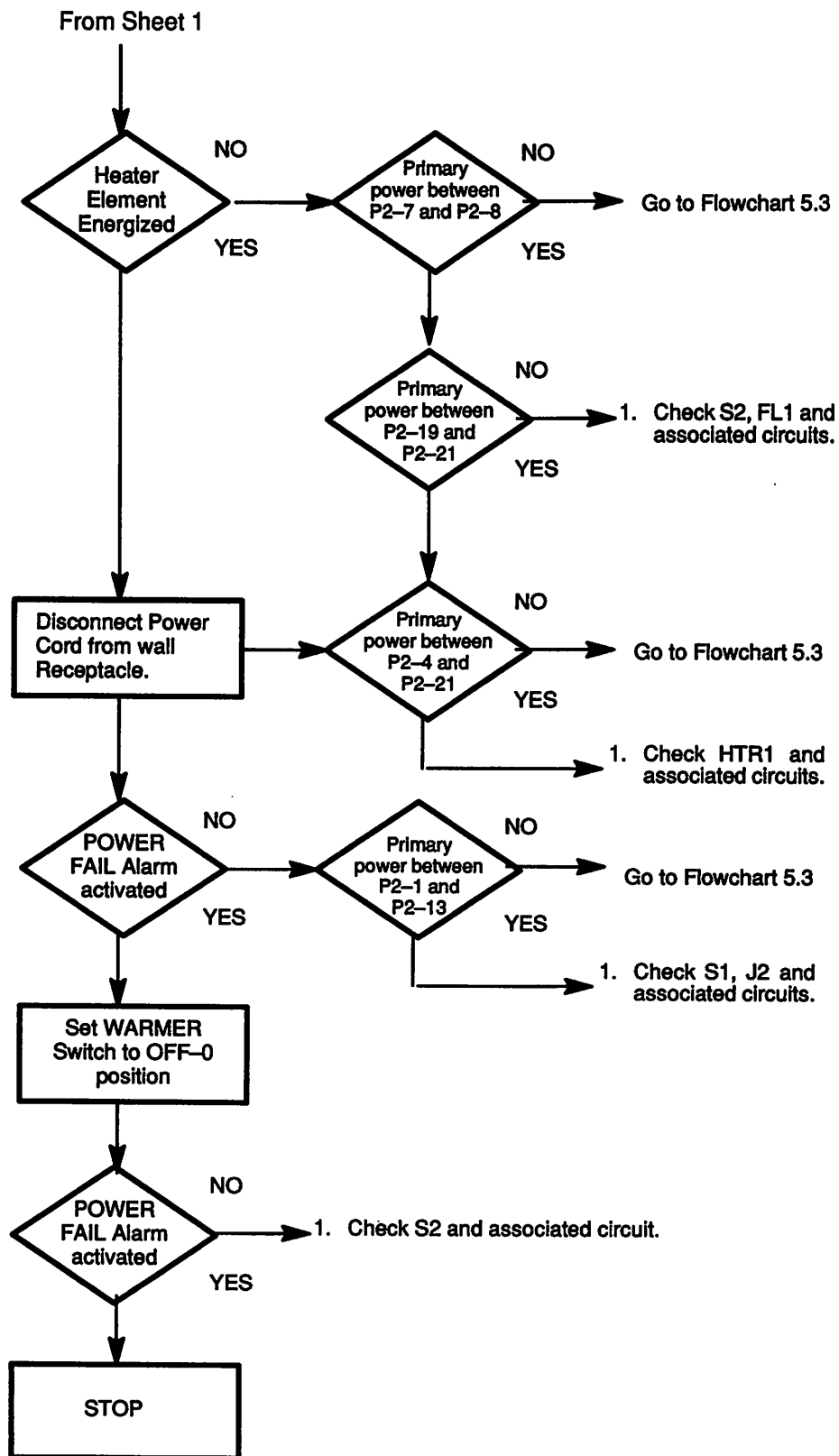
(Sheet 8 of 9)



FLOWCHART 5.1 CONTROLLER MODULE TROUBLESHOOTING
(Sheet 9 of 9)

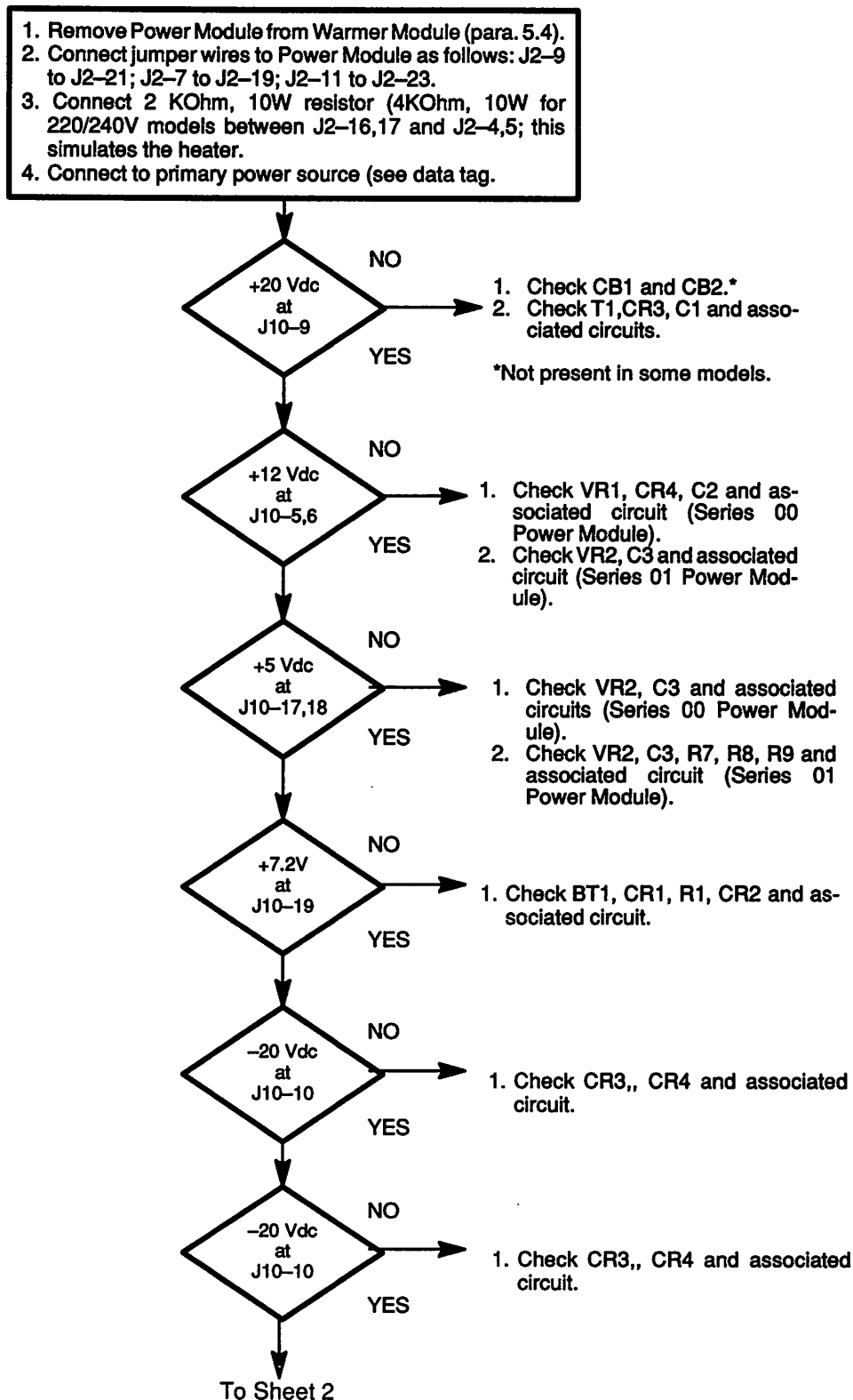


FLOWCHART 5.2 WARMER MODULE TROUBLESHOOTING
(Sheet 1 of 2)

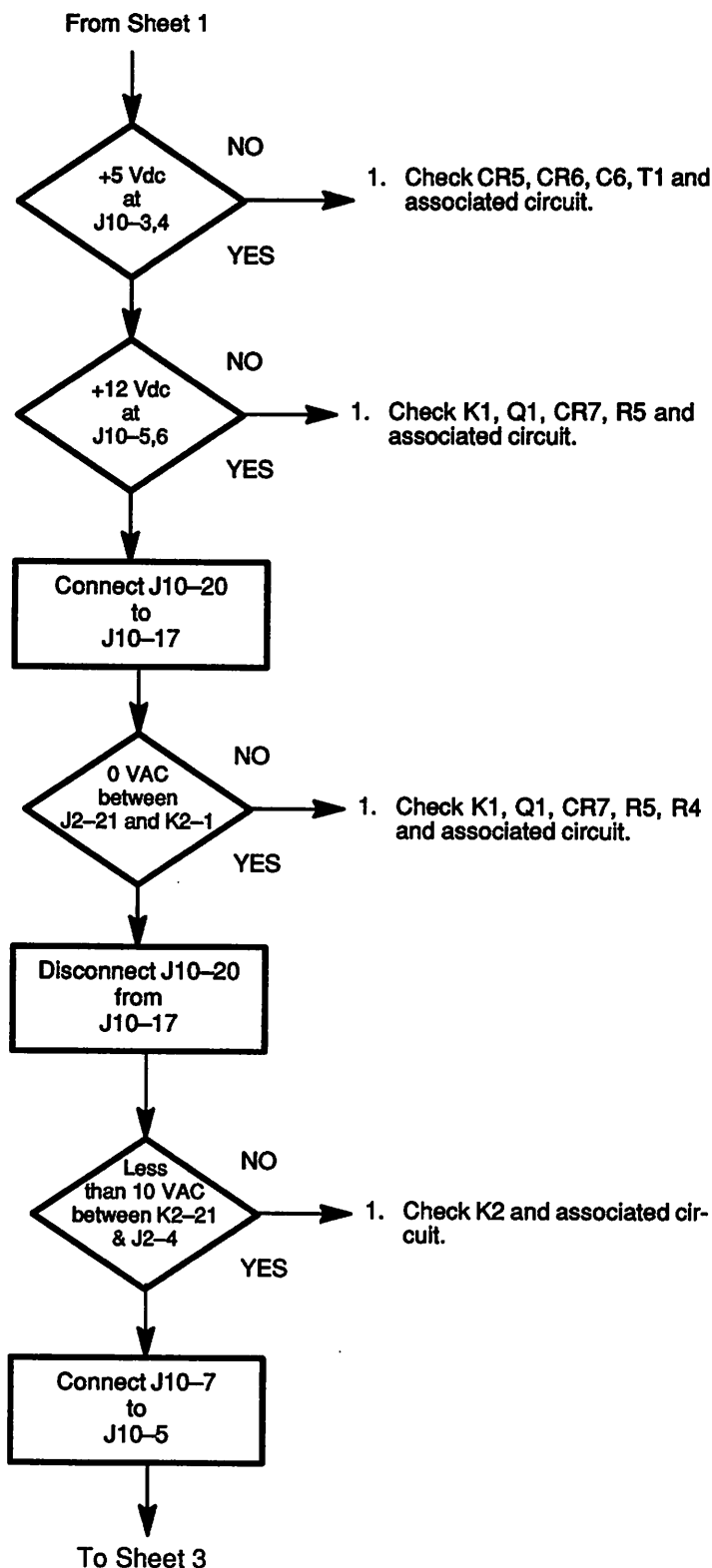


FLOWCHART 5.2 WARMER MODULE TROUBLESHOOTING

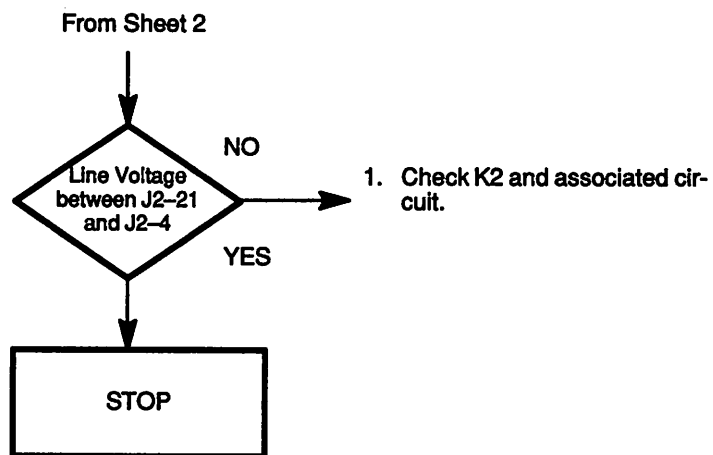
(Sheet 2 of 2)



FLOWCHART 5.3 POWER MODULE TROUBLESHOOTING
(Sheet 1 of 3)



FLOWCHART 5.3 POWER MODULE TROUBLESHOOTING
(Sheet 2 of 3)



FLOWCHART 5.3 POWER MODULE TROUBLESHOOTING
(Sheet 3 of 3)

5.4 REMOVAL AND REPLACEMENT PROCEDURES

NOTE: Unless otherwise indicated, these procedures apply to all equipment covered in this manual.

5.4.1 GENERAL

This section provides removal and replacement procedures for components of the equipment. Removal and replacement procedures for components other than those provided are obvious upon inspection.

5.4.2 POWER MODULE REMOVAL AND REPLACEMENT

1. **DISCONNECT THE POWER CORD** from the Power Module (1).
2. **REFER TO FIGURE 5.1** and remove the two mounting screws (5) and washers (6) from the Power Module and carefully pull the Power Module out of the Warmer Housing (2) far enough to disconnect the interconnecting ribbon cable (3) from connector J10 (4) on PCB1.
3. **REMOVE THE POWER MODULE** from the Warmer Housing.
4. **TO REPLACE THE POWER MODULE** reverse the above procedure.

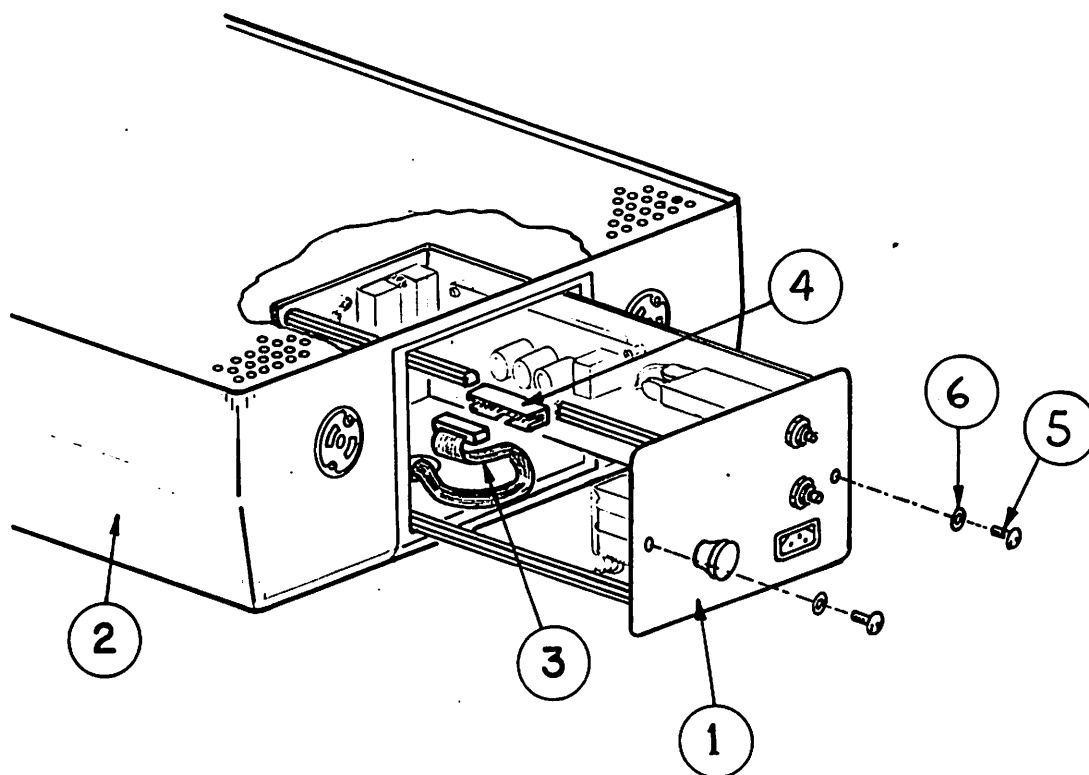


FIGURE 5.1 POWER MODULE REMOVAL AND REPLACEMENT

5.4.3 CONTROLLER MODULE REMOVAL AND REPLACEMENT

1. **REFER TO FIGURE 5.2** and remove the two mounting screws (1) and lock washers (3) that secure the Controller to the Mounting Post and unmount the Controller.

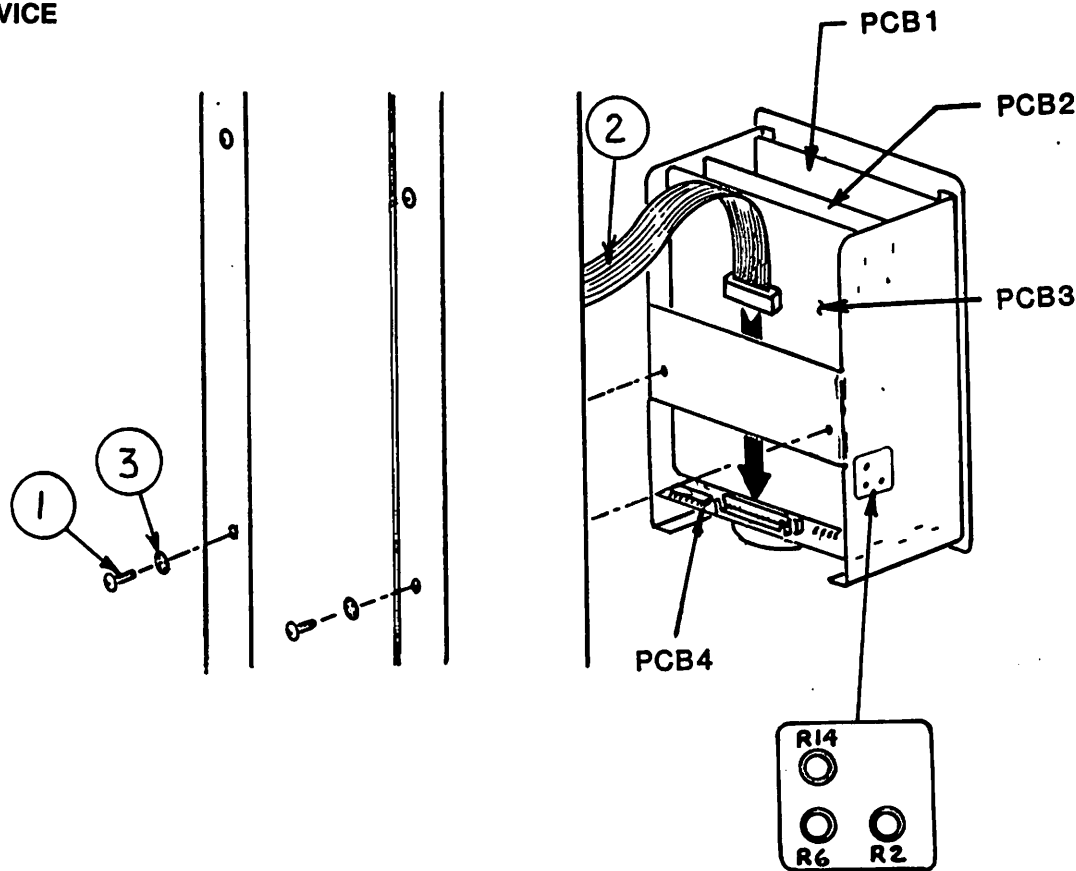


**FIGURE 5.2 CONTROLLER MODULE REMOVAL AND REPLACEMENT, AND
ADJUSTMENT AND CONNECTION POINTS**

2. **DISCONNECT THE INTERCONNECTING RIBBON CABLE (2)** from connector J4 on PCB4 and remove the Controller from the Mounting Post.
3. **TO REPLACE THE CONTROLLER**, reverse the above procedure.

5.4.4 MOUNTING POST TRIM STRIP REMOVAL AND REPLACEMENT

NOTE: This procedure applies to the Infant Intensive Care System only. To remove the Trim Strip from the Wall Mounted Infant Intensive Care System, it will be necessary to remove the Warmer Module and Controller (paragraph 2.2.4) and the Oxygen Delivery Manifold Assembly (if one has been installed). The Trim Strip can then be removed by sliding it out through the top opening in the Mounting Post.

1. **REFER TO FIGURE 5.3.** Loosen (do not remove) the four screws (1) securing the Instrument Tray Support (2) to the Bassinet Support (3) and pull the support back as far as it will go (approx. 1/4 inch).

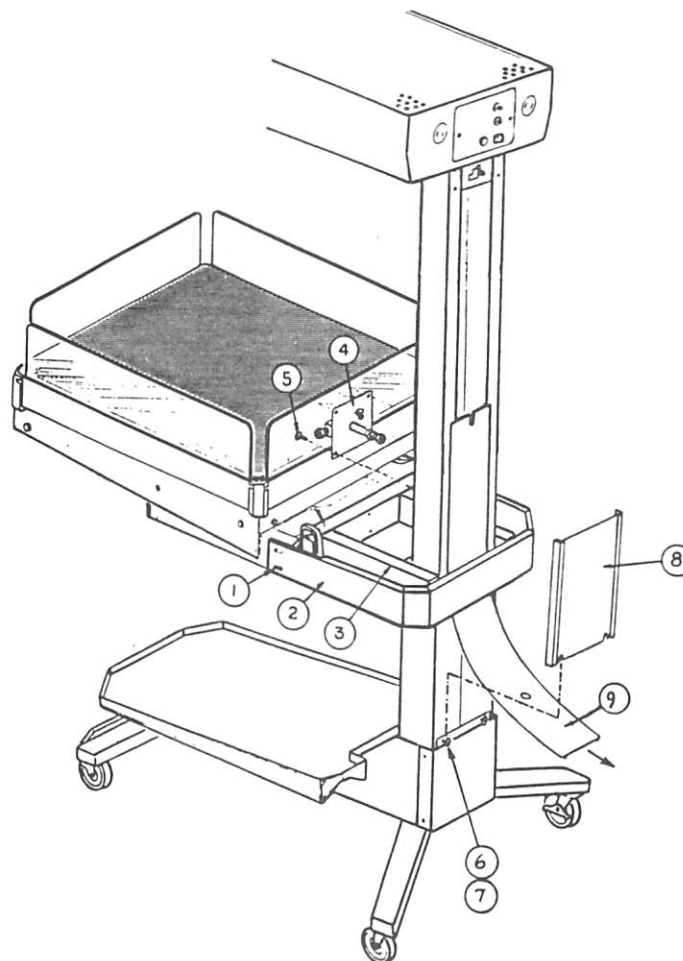


FIGURE 5.3 MOUNTING POST TRIM STRIP REMOVAL AND REPLACEMENT

2. **IF AN OXYGEN DELIVERY MANIFOLD ASSEMBLY (4) HAS BEEN INSTALLED**, remove the four screws (5) that secure the assembly to the front of the Mounting Post and temporarily remove the assembly from the post.

NOTE: If an oxygen hose is connected to the Manifold Assembly, it will be necessary to disconnect the hose before the assembly can be removed.

3. **LOOSEN THE TWO SCREWS (6) AND LOCK WASHERS (7)** that fasten the rear cart cover (8) to the Cart and remove the cover and two corner trim angles.
4. **SLIDE THE PLASTIC TRIM STRIP (9)** down and off post and the two corner trim angles.
5. **TO REPLACE THE TRIM STRIP**, reverse the above procedure.

5.4.5 I.V. POLE AND MONITOR SHELF (ACCESSORIES) MOUNTING BRACKET REMOVAL AND REPLACEMENT

1. **REMOVE THE MOUNTING POST TRIM STRIP** (refer to paragraph 5.4.4).
2. **REFER TO FIGURE 5.4** and remove the two screws (1), flat washers (2), and lock washers (3) that secure the mounting bracket (4) to the mounting post and remove the mounting bracket.
3. **TO REPLACE THE MOUNTING BRACKET**, reverse the above procedure.

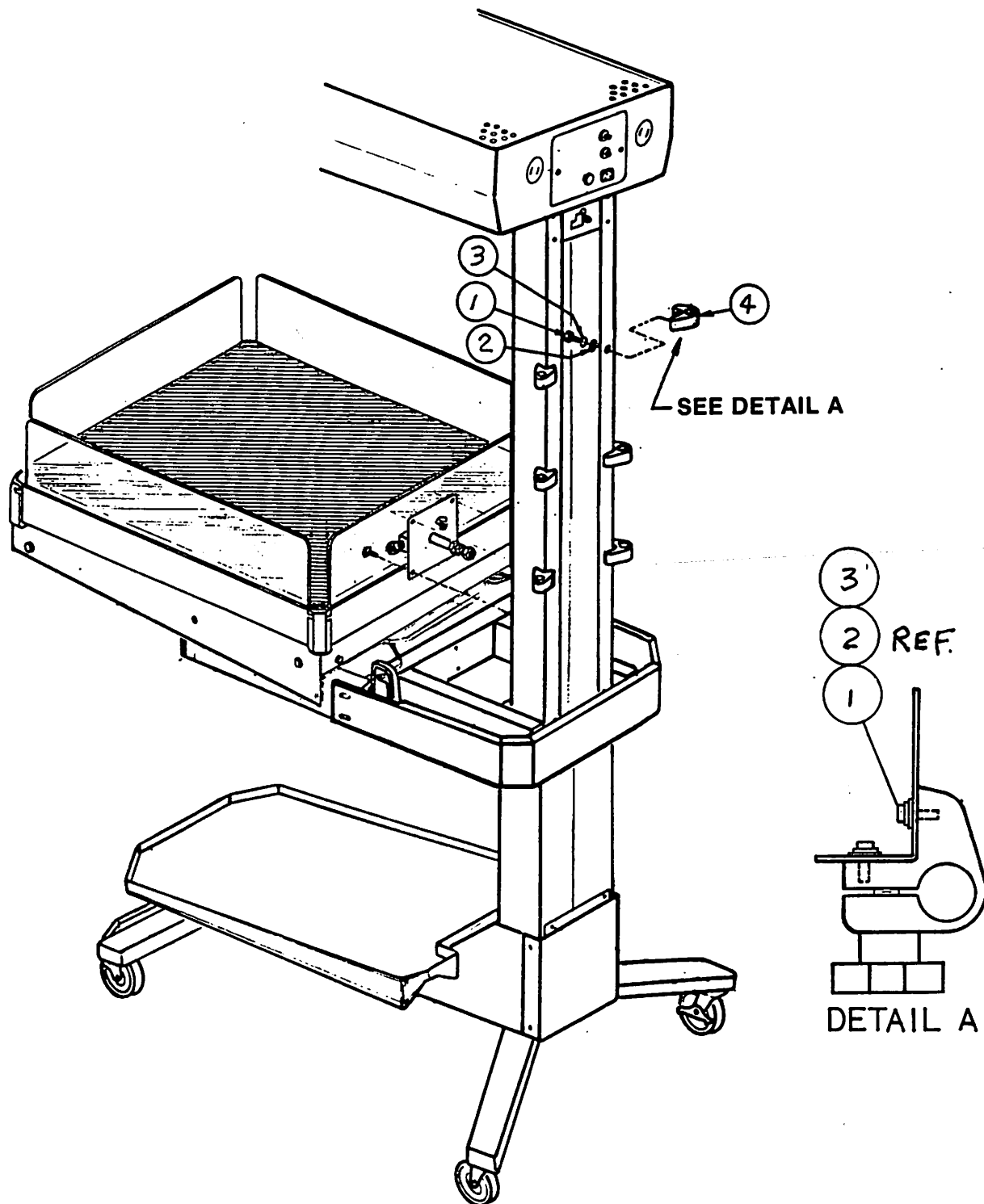


FIGURE 5.4 MOUNTING BRACKET REMOVAL AND REPLACEMENT

5.4.6 QUARTZ HEATING ELEMENT REMOVAL AND REPLACEMENT

IMPORTANT: The Quartz Heating Element may be removed and replaced without disassembling the Warmer Module.

WARNING: To avoid touching any hot surfaces, the Warmer Module should be turned off for at least 30 minutes before starting this procedure.

1. **REFER TO FIGURE 5.5**, view A, and loosen (do not remove) the mounting screw (1) that secures the curved reflector (2) to the heater support bracket.
2. **RAISE THE CURVED REFLECTOR** up to release it from the mounting screw and slide it toward the opposite end of the reflector assembly to release the curved reflector for removal.

NOTE: On early production models, it may be necessary to rotate the curved reflector slightly so that it will pass through the keyhole opening in the parabolic reflector.

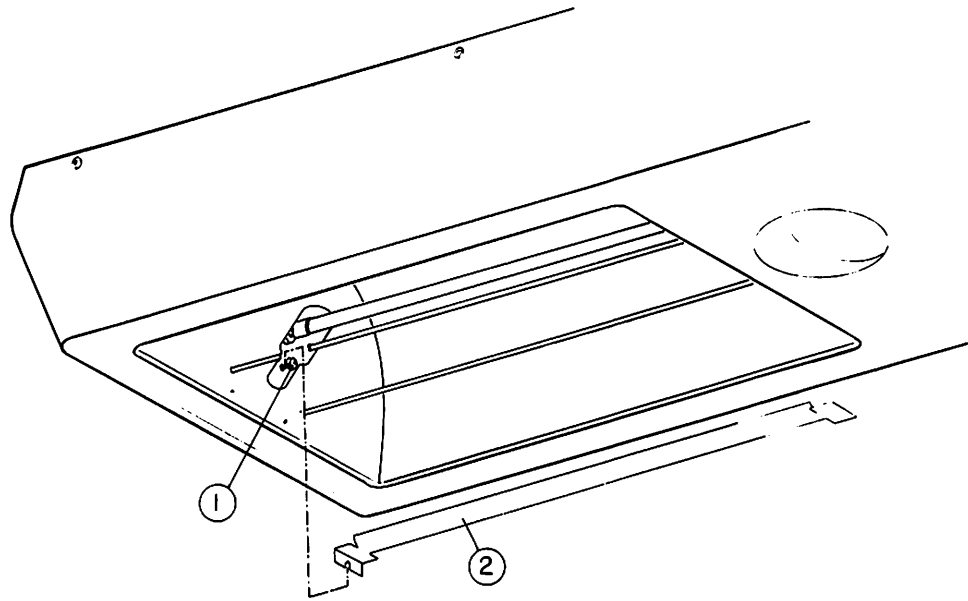
CAUTION:

- The Quartz heating element is a fragile component; handle with care to prevent damage.
 - Do not handle the heating element with bare hands; skin oils may cause damage to the quartz heater. Use clean, lint-free cloth gloves or similar hand covering. If skin contact with the heater occurs accidentally, clean it thoroughly with alcohol before reinstalling.
3. **REFER TO FIGURE 5.5**, view B. Grasp the heating element (3) with both hands and push firmly toward the front of the Warmer Module to release the rear end of the heating element from the rear spring-loaded connector (4). Maintain this pressure while lowering the rear end of the heating element until it is removed from this parabolic reflector. Carefully withdraw the front end of the heating element from the front end spring-loaded connector; remove the heating element.
 4. **INSTALL THE REPLACEMENT HEATER** element by reversing the above procedure.

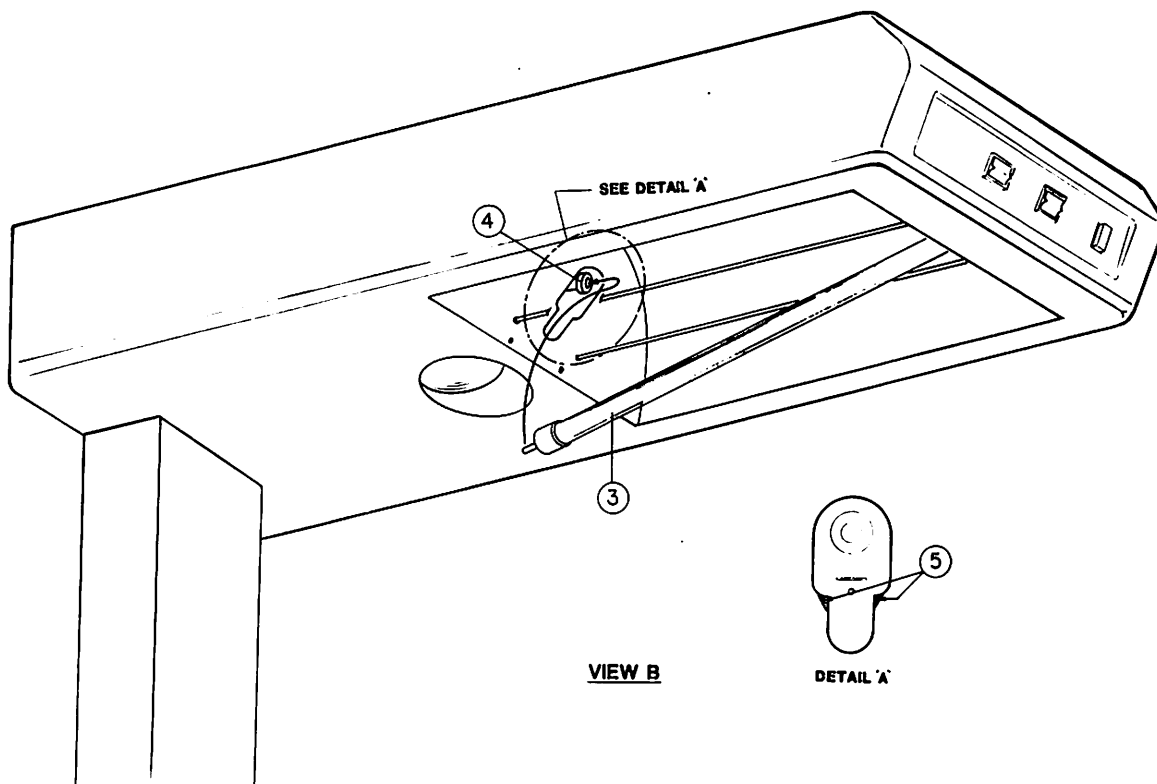
IMPORTANT:

- When installing the replacement heater element, it is important that it be inserted at an angle as shown in Figure 5.5, view B. Insert one end and seat it firmly into the spring-loaded connector and then, in one motion, raise the other end and insert it into the spring-loaded connector at the opposite end.
- When installing the replacement heating element, it may be necessary to bend the tabs (5) in the connector opening slightly to provide adequate clearance in the connector opening.

NOTE: It should be noted that later production units have an oval shaped connector opening in the reflector to provide for easier installation of the heating element.



VIEW A



VIEW B

DETAIL A

FIGURE 5.5 QUARTZ HEATING ELEMENT REMOVAL AND REPLACEMENT

5.4.7 EXAMINATION LIGHT REMOVAL AND REPLACEMENT

1. **REFER TO FIGURE 6.10.** Remove the eight screws (30), lock washers (34), flat washers (33), that secure the Warmer Top screen (12) to the Warmer Assembly and remove the screen.
2. **REFER TO FIGURE 5.6** and unplug the connector (4) from the lamp (3).
3. **REFER TO FIGURE 5.6** and loosen (do not remove) the two screws (1) that secure the lamp mounting bracket (2) to the Warmer Module Subassembly and remove the lamp mounting bracket and lamp. Use care to ensure that the window glass (5) is not dislodged during removal.
4. **REMOVE THE LAMP** from the bracket.

CAUTION: When replacing the lamp, do not touch the conical inside portion of the lamp; damage to the lamp may result.

5. **TO REPLACE THE EXAMINATION LIGHT**, reverse the above procedure.

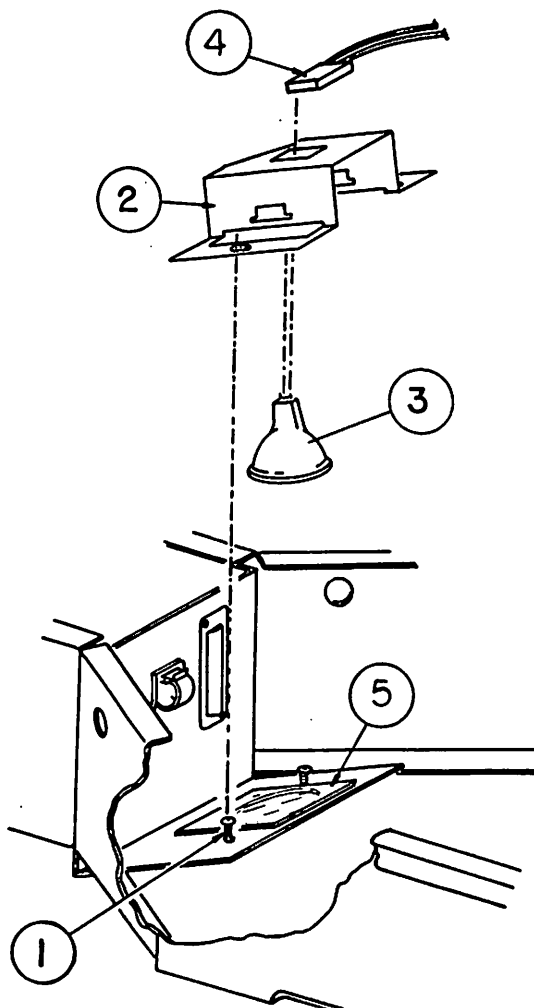


FIGURE 5.6 EXAMINATION LIGHT REMOVAL AND REPLACEMENT

5.4.8 HEATER/REFLECTOR ASSEMBLY REMOVAL AND REPLACEMENT

- **INFANT INTENSIVE CARE SYSTEM**
 - **WALL MOUNTED INFANT INTENSIVE CARE SYSTEM**
 - **WALL MOUNTED INFANT WARMER**
1. **REMOVE THE WARMER MODULE AND CONTROLLER** by reversing the procedure given in paragraph 2.2.4. (2.5.3 for Wall Mounted Infant Warmer.)
 2. **REMOVE THE POWER MODULE** from the Warmer Module using the procedure given in paragraph 5.4.2.
 3. **REFER TO FIGURE 6.10.** Disconnect the ground wire (16) from the post mounting pivot bracket (5), remove the retaining ring (11) and slide the pivot bracket off the warmer mounting pivot bracket (2).
 4. **REMOVE THE SIX SCREWS (29)** and nylon finishing washers (32) that secure the Warmer Hood (4) to the Warmer Module Subassembly (1) and remove the hood.
 5. **REMOVE THE FOUR SCREWS (28)** that secure the heater/Reflector Assembly (3) and remove the assembly; disconnect the heater wires at each end.
 6. **TO REPLACE THE HEATER/REFLECTOR ASSEMBLY,** reverse the above procedure.

5.4.9 HEATER/REFLECTOR ASSEMBLY REMOVAL AND REPLACEMENT

- **FREE STANDING INFANT WARMER**
1. **REMOVE THE WARMER MODULE AND CONTROLLER** by reversing the procedure given in paragraph 2.3.3.
 2. **REMOVE THE POWER MODULE** from the Warmer Module using the procedure given in paragraph 5.4.2.
 3. **REFER TO FIGURE 6.15.** Remove the six screws (21) that secure the Warmer Hood (4) to the Warmer Module Subassembly (1) and remove the Hood.
 4. **REMOVE THE FOUR SCREWS (20)** that secure the Heater/Reflector Assembly (3) and remove the assembly; disconnect the heater wires.
 5. **TO REPLACE THE HEATER/REFLECTOR ASSEMBLY,** reverse the above procedure.

SECTION 6 PARTS LIST

6.1 GENERAL

This section provides parts lists for the equipment. Part numbers of accessories and single use items are provided below.

ACCESSORIES – INFANT INTENSIVE CARE SYSTEM AND WALL MOUNTED IICS

I.V. Pole Package	78 166 71
I.V. Pole Package (Includes Pivot Bracket)	78 166 72
Cart Shelf Package	*78 155 80
Monitor Shelf Package (2 shelves and 6 mounting brackets)	78 165 70
Monitor Shelf Unit (One shelf w/o mounting bracket)	78 165 80
Oxygen Delivery System Package (Wall Oxygen Only)	78 442 85
Oxygen Delivery System With Auxiliary Tank Provision Package (Wall and Auxiliary Tank Oxygen)	**78 441 70
Direct Magnification Radiography (DMR) Cassette Holder Pkg	78 167 70
Twin-O-Vac™	78 404 20
Gauge (0–200 mmHg)	78 404 25
Jar	78 404 10
Flowmeter	78 400 30
AC Receptacle Box of Assembly	78 446 70
Drawer Module Package (Two 6" Drawers)	78 930 89
Drawer Module Package (One 6" Drawer and Two 3" Drawers)	78 930 90
Phototherapy System, 115 VAC (English Labeling)	78 444 70
Phototherapy System, 115 VAC (Spanish Labeling)	78 444 71
Phototherapy System, 115 VAC (French Labeling)	78 444 72
Phototherapy System, 230 VAC (English Labeling)	78 444 80
Phototherapy System, 230 VAC (Spanish Labeling)	78 444 81
Phototherapy System, 230 VAC (French Labeling)	78 444 82
Phototherapy System, 230 VAC (German Labeling)	78 444 83
Phototherapy System, 100 VAC (English Labeling)	78 444 90
Phototherapy Rack Kit	78 444 96
Universal Apgar Timer	78 290 55

ACCESSORIES – FREE STANDING AND WALL MOUNTED INFANT WARMERS

Phototherapy System, 115 VAC (English Labeling)	78 444 70
Phototherapy System, 115 VAC (Spanish Labeling)	78 444 71
Phototherapy System, 115 VAC (French Labeling)	78 444 72
Phototherapy System, 230 VAC (English Labeling)	78 444 80
Phototherapy System, 230 VAC (Spanish Labeling)	78 444 81
Phototherapy System, 230 VAC (French Labeling)	78 444 82
Phototherapy System, 230 VAC (German Labeling)	78 444 83
Phototherapy System, 100 VAC (English Labeling)	78 444 90
Phototherapy Rack Kit	78 444 96
Universal Apgar Timer	78 290 55

* Infant Intensive Care System only

** 230V Infant Intensive Care System only

**IICS
PARTS LIST**

ACCESSORIES – FREE STANDING AND WALL MOUNTED INFANT WARMERS (CONT.)

Resuscitation Package	78 454 81
Includes:	
_ Flowmeter without O ₂ Take-Off	78 400 30
_ Twin-O-Vac™ Pediatric Suction Unit.	78 404 20
_ Resuscitation Module	78 930 94
_ Air Delivery System, Yoke and Gauge	78 460 70
_ O ₂ Delivery System, Yoke and Gauge	78 461 70
_ O ₂ /Air Tank Mounting Bracket	78 459 70

SINGLE USE ITEMS:

PREMI-PROBE® Disposable Skin Temp Probes (Box of 10)	68 209 20
PREMI-PROBE® Disposable Skin Temp Probes (Case of 10 Boxes)	68 209 30
CRITTER COVERS® Probe Covers (Box of 600)	68 209 45
TWIN-O-VAC™ Filters (Box of 100)	78 404 15

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IICS
PARTS LIST

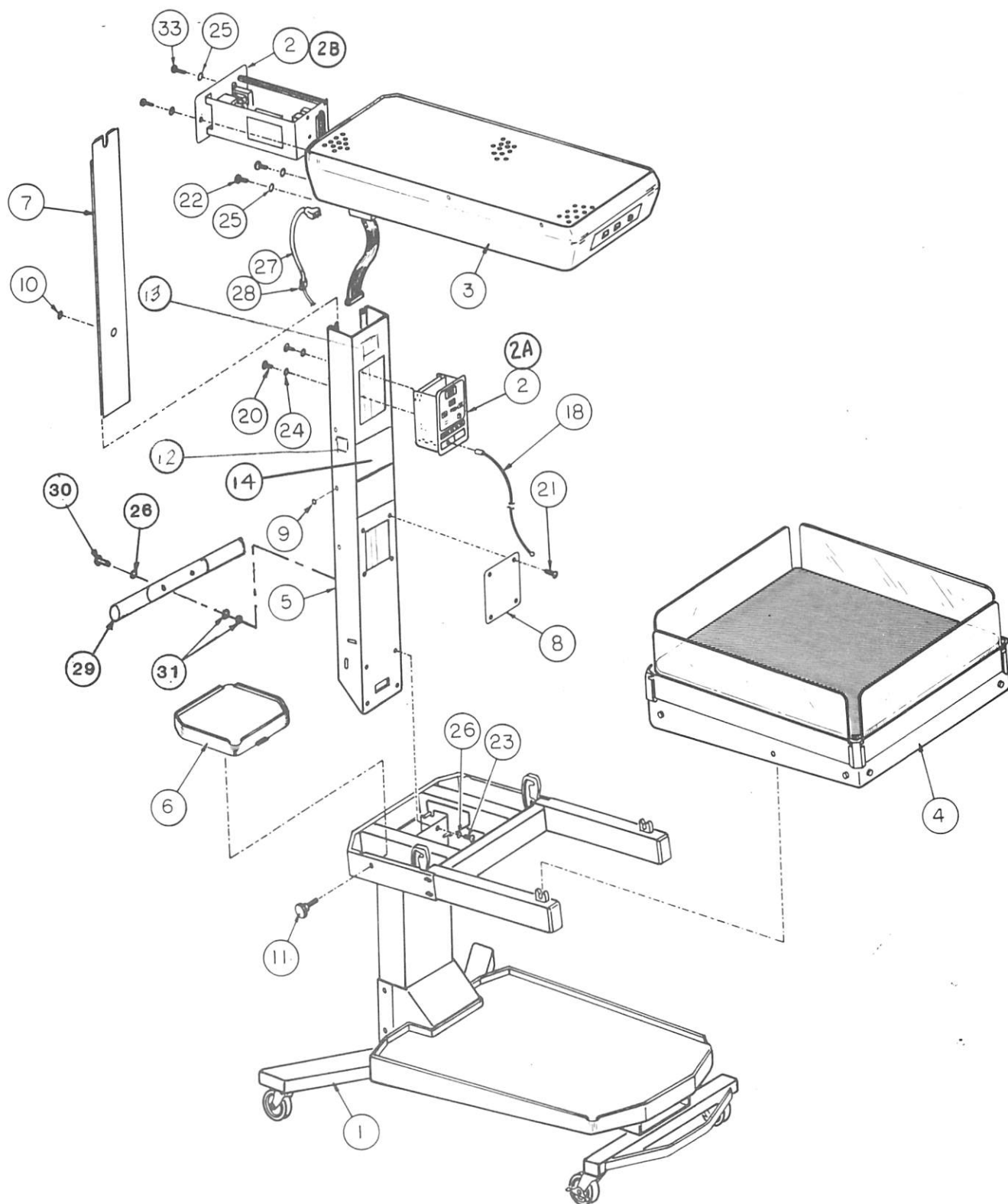


FIGURE 6.1 PARTS LOCATION DIAGRAM, INFANT INTENSIVE CARE SYSTEM

TABLE 6.1 INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		INFANT INTENSIVE CARE SYSTEM:	
		English Labeling, 110/120V	78 000 70
		Spanish Labeling, 110/120V	78 000 71
		French Labeling, 110/120V	78 000 72
		English Labeling, 220/240V	78 000 80
		Spanish Labeling, 220/240V	78 000 81
		French Labeling, 220/240V	78 000 82
		German Labeling, 220/240V	78 000 83
		English Labeling, 100V	78 000 90
1		Cart Assembly (Refer to Table 6.2)	78 155 70
2*		CONTROLLER/POWER MODULE PACKAGE:	
		(Refer to Tables 6.3 through 6.9)	
		English Labeling, 110/120V	78 308 70
		Spanish Labeling, 110/120V	78 308 71
		French Labeling, 110/120V	78 308 72
		English Labeling 220/240V	78 308 80
		Spanish Labeling, 220/240V	78 308 81
		French Labeling, 220/240V	78 308 82
		German Labeling, 220/240V	78 308 83
		English Labeling, 100V	78 308 90
2A		CONTROLLER ASSEMBLY (Refer to Table 6.3 when Controller is used with Series 01 Power Module.)	
		English Labeling	78 305 80
		Spanish Labeling	78 305 81
		French Labeling	78 305 82
		German Labeling	78 305 83

* Contains Series 00 Power Module

TABLE 6.1 INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
2B		POWER MODULE ASSEMBLY (Series 01) (Refer to Tables 6.8 and 6.9A)	
		English Labeling 110/120V	78 306 70
		Spanish Labeling 110/120V	78 306 71
		French Labeling 110/120V	78 306 72
		English Labeling 220/240V	78 306 80
		Spanish Labeling 220/240V	78 306 81
		French Labeling 220/240V	78 306 82
		German Labeling 220/240V	78 306 83
		English Labeling 100V	78 306 90
3		WARMER MODULE ASSEMBLY: (Refer to Table 6.10)	
		English Labeling, 110/120V	78 265 70
		Spanish Labeling, 110/120V	78 265 71
		French Labeling, 110/120V	78 265 72
		English Labeling, 220/240V	78 265 80
		Spanish Labeling, 220/240V	78 265 81
		French Labeling, 220/240V	78 265 82
		German Labeling, 220/240V	78 265 83
		English Labeling, 100V	78 265 90
4		Bassinet Assembly: (Refer to Table 6.13)	78 162 70
5		Post, Upper	
		English Labeling	78 940 16
		Spanish Labeling	78 940 17
		French Labeling	78 940 18
		German Labeling	78 940 19
6		Tray, Instrument	78 155 10
7		Strip, Trim, Plastic, Upper post	78 161 16
8		Plate, Cover, Upper Post	78 161 10
9		Plug Button, 1/4 Mtg. Hole, Plastic	78 161 00
10		Plug, Button, 7/8 Dia Mtg. Hole, Plastic	78 161 20
11		Knob, Knurled, 1/4-20 Thd Shaft	17 061 10
12		Label, Shelf Load Limit, Eng	78 000 10
13		Label, Caution, Heating Hazard, Eng	78 000 15

TABLE 6.1 INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
14		Placard, Precautions/Instructions	78 000 45
15		Not Used	
16		Not Used	
17		Not Used	
18		Probe, Temp, Skin, Reusable	68 209 70
		Probe, Temp, Skin, Disposable	
		(10 Boxes of 10 Probes)	68 209 30
19		Cover, Probe, Skin Temp (Box of 100),	26 901 81
		(Not Shown)	
20		Screw, 6-32 x 3/8, TR, PH, SS	99 023 31
21		Screw, 8-32 x 5/16, RD, SL, NYL	99 031 07
22		Screw, 10-32 x 5/8, TR, PH, SS	99 042 58
23		Screw, 1/4 - 20 x 1/2, RD, PH, SS	99 055 81
24		Washer, #6, LK, SHI, SS	99 122 19
25		Washer, LK, INT, #10, SS	99 123 92
26		Washer, LK, SP, 1/4, SS	99 125 53
27		Clamp, Cable, .31 I.D.	17 732 42
28		Cable Assembly, AC Power Cord, Domestic	17 AZ 100
		Cable Assembly, AC Power Cord, Export	17 AZ 200
29		Handle, Post	78 285 30
30		Scr, 1/4-20 x 1.75 CP, HX, S CA	99 059 05
31		Washer, FI 0.265 I.D. x 0.500 O.D.	99 125 24
32		Not Used	
33		Screw, 10-32 x 1/2, TR, PH, SS	99 042 01
34		Label, Temperature Conversion	68 111 35

(Not shown. To be installed in a location selected by user.)

IICS PARTS LIST

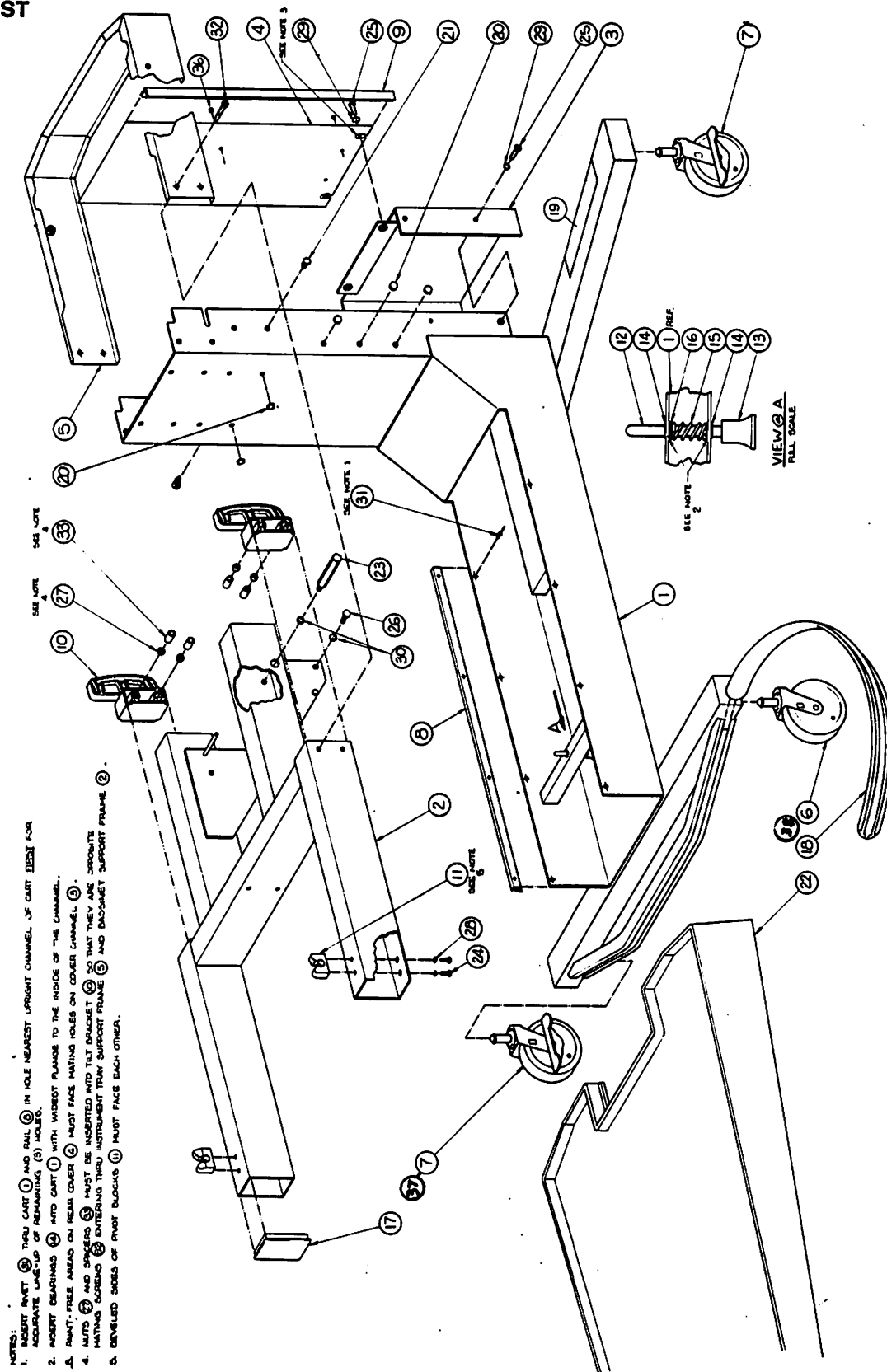


FIGURE 6.2 PARTS LOCATION DIAGRAM, CART ASSEMBLY

TABLE 6.2CART ASSEMBLY, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CART ASSEMBLY	78 155 70
1		Base, Cart, Welded	78 940 32
2		Frame, Support, Bassinet	78 160 00
3		Channel, Cover, Cart Base	78 155 20
4		Cover, Rear, Cart	78 155 25
5		Frame, Support, Instrument Tray	78 160 10
6		Caster, w/o Brake, Non-Conductive, 4"	26 801 00
7		Caster, w/Brake, Non-Conductive, 4"	26 802 00
8		Rail, Shelf Slide, Plastic (P/O Item 1)	78 155 46
9		Angle, Corner Trim, Plastic	78 155 51
10		Bracket, Tilt, Adjusting, Plastic	78 160 05
11		Block, Pivot	78 160 20
12		Pin, Latching, Cart Shelf	78 155 40
13		Knob, Plastic	78 155 43
14		Bearing, Split, .25 I.D.	78 155 65
15		Spring, Compression	20 016 03
16		Ring, Retaining	99 181 40
17		Cap, Tubing, Plastic, 1-1/2 x 3 x .083 Wall	78 610 64
18		Strip, Vinyl, Cart Bumper	78 155 30
19		Not Used	
20		Plug Button, .25 Mtg Hole	78 161 00
21		Plug, Panel, Fastening	78 155 55
22		Shelf, Cart, Plastic	78 155 05
23		Scr, 5/16-18, Hex, Shoulder	78 155 38
24		Scr, 8-32 x 1/2, TR, PH, SS	99 031 99
25		Scr, 10-32 x 3/8, TR, PH, SS	99 041 27
26		Scr, 5/16-18 x 5/8, HEX, STL, CA	99 064 30
27		Nut, 10-32, HEX, Flexlock, S, Z1	99 107 38
28		Washer, LK, SP, #8, SS	99 122 95
29		Washer, LK, Int. Tooth, #10, SS	99 123 92
30		Washer, LK, SP, 5/16, S, Z1	99 126 32

78 16220

TABLE 6.2 CART ASSEMBLY, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
31		Rivet, Pop, Dome, 1/8 Dia x .328 LG, SS, ... (P/O Item 1)	99 131 70
32		Scr, 10-32 x 1 1/4, TR, PH, SS	99 044 06
33		Spacer, Nylon	99 125 65
34		Not Used	
35		Not Used	
36		Plug Button, Plastic, .19 Mtg. Hole	78 155 27
37		Caster, With Brake, 5"	78 000 55
38		Caster, Without Brake, 5"	78 000 56
39		Plug Button, Plastic . 26 Mtg. Hole	78 161 01
40		Plug Button, Plastic . 28 Mtg. Hole	78 161 02

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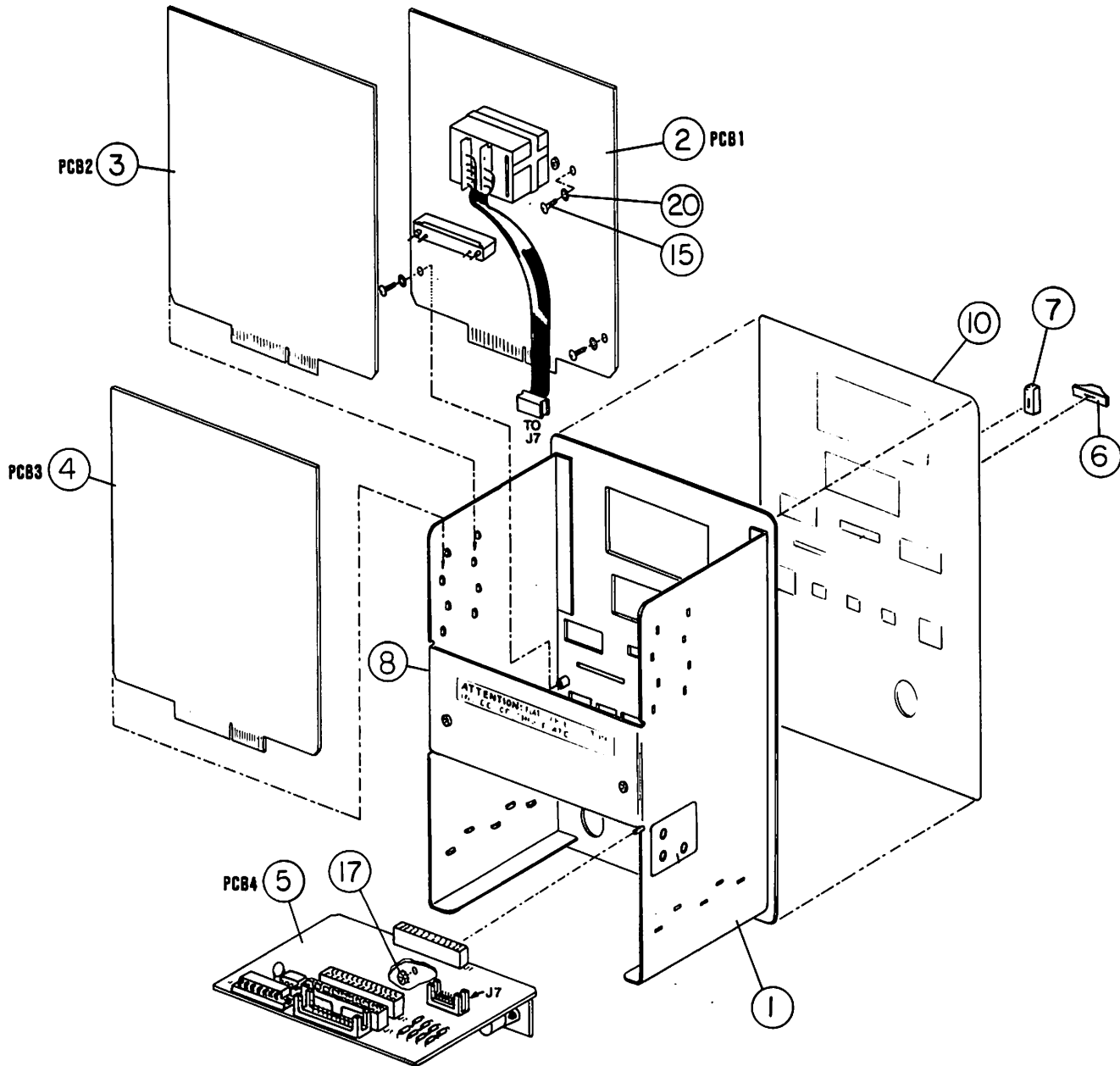


FIGURE 6.3 PARTS LOCATION DIAGRAM, CONTROLLER ASSEMBLY

TABLE 6.3 CONTROLLER ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CONTROLLER ASSEMBLY:	
		English Labeling	78 305 80
		Spanish Labeling	78 305 81
		French Labeling	78 305 82
		German Labeling	78 305 83
1		Chassis, Controller (Includes Items 9-12):	
		English Labeling	78 940 28
		Spanish Labeling	78 940 29
		French Labeling	78 940 30
		German Labeling	78 940 31
2		PCB1 Assy, Display (Refer to Table 6.4)	78 315 70
3		PCB2 Assy, Measurement/Dgtl	78 316 70
		(Refer to Table 6.5)	
4		PCB3 Assy, Control (Refer to Table 6.6)	78 317 70
5		PCB4 Assy, Motherboard (Refer to Table 6.7)	78 318 70
6		Button, Slide Switch, Topping	17 732 30
7		Knob, Control, Slide, Single	89 100 30
8		Tag, Data	78 155 57
9		Label, Pot Adjustment	78 305 17
10		Nameplate, Front Panel, Controller	
		(Includes Item 12):	
		English	78 930 77
		Spanish	78 930 78
		French	78 930 79
		German	78 930 80
11		Label, Attn, Cable	78 305 25
12		Membrane Switch (Included with Items	
		1 and 10)	
13		Not Used	
14		Not Used	
15		Scr, 4-40 x 3/8 LG, TR PH SS	99 011 07
16		Not Used	
17		Nut, 4-40, HX, "KEPS" S CAD PL	99 103 33
18		Not Used	
19		Not Used	
20		Wshr, No. 4, LK SP SS	99 121 36

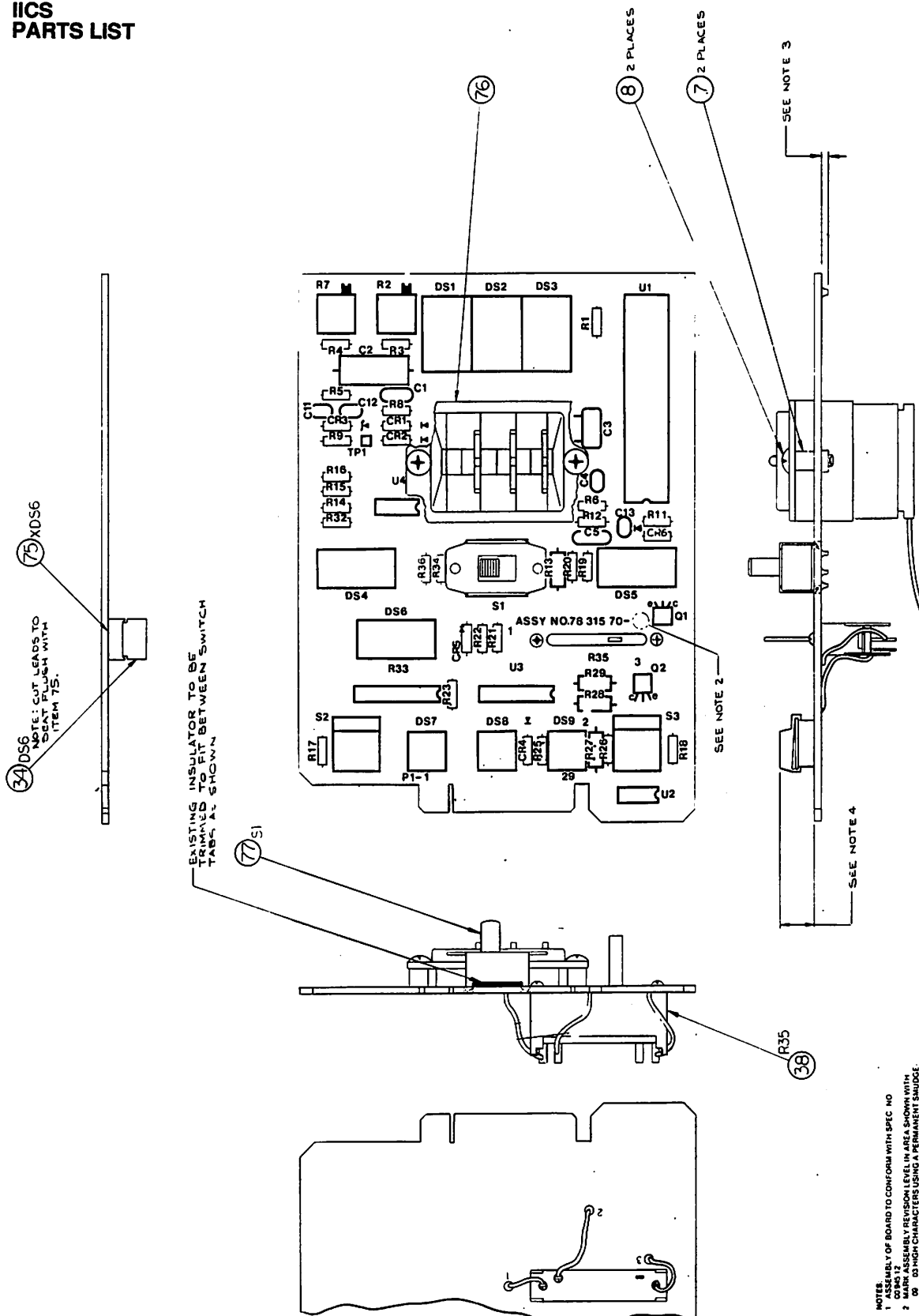


FIGURE 6.4 PARTS LOCATION DIAGRAM, CONTROLLER DISPLAY BOARD PCB1

TABLE 6.4 CONTROLLER DISPLAY BOARD PCB1, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CONTROLLER DISPLAY BOARD PCB1	78 315 70
1		Not Used	
2		Not Used	
3		Not Used	
4		Not Used	
5		Not Used	
6		Not Used	
7		Spacer, .115 I.D. x 3/16 O.D. x 3/16 LG, NL	99 121 62
8		Scr, 4-40 x 7/16 LG, TR PH SS	99 011 35
9		Nut, PEM, 4-40, KF2-440 S CA	99 103 34
10		Not Used	
11	C11,12,13	Cap, .001 MFD, 10%, 50V	17 BF 377
12	C1	Cap, .047 MFD, 10%, 50V	17 BF 257
13	C3,5	Cap, .10 MFD, 20%, 50V	17 430 57
14	C2	Cap, .22 MFD, 5%, 100V	17 AY 085
15	C4	Cap, 100 PF, 10%, 50V	17 BF 365
16		Not Used	
17		Not Used	
18		Not Used	
19		Not Used	
20	CR2,4,5	Diode, 1N914	17 AR 500
21	CR3	Diode, Zener, 1N752A, 5.6V	17 502 60
22	CR1,6	Diode, 1N34A	17 500 20
23		Not Used	
24	DS1,2,3	Display, LED, Orn	17 BE 247
25		Not Used	
26	U1	I.C., CMOS, 7107 A/D Conv	17 630 75
27	U2	I.C., CMOS, 3632 PERF Driver	17 630 04
28	U3	I.C., Low Power, 324 Quad Op Amp	17 631 45
29	U4	I.C., 8 Pin, 1458 Dual Op Amp	17 629 36
30		Not Used	
31		Not Used	

TABLE 6.4 CONTROLLER DISPLAY BOARD PCB1, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
32	DS7,8,9	Lamp, LED, Red	17 BE 258
33	DS4,5	Lamp, LED, Grn	17 BE 240
34	DS6	Lamp, LED, Yellow, Modified	78 315 30
35		Not Used	
36		Not Used	
37	R2, 7	Res, Var, 500, .5W, Horiz. Adj.	17 AN 115
38	R35	Res, Var, Slide, 5.0K, .1W	17 530 52
39	R33	Res, Network, DIP, 390, 2%, 1.75W	17 AU 560
40		Not Used	
41	R17	Res, 4.30K, .1%, 1/8W	17 AG 983
42		Not Used	
43		Not Used	
44	R3	Res, 1.50K, 1%, 1/8W	17 AF 209
45	R23	Res, 3.09K, 1%, 1/8W	17 AF 239
46	R12	Res, 10.0K, 1%, 1/8W	17 AF 288
47	R11	Res, 15.0K, 1%, 1/8W	17 AF 305
48	R4, 9	Res, 20.0K, 1%, 1/8W	17 AF 317
49	R6	Res, 100K, 1%, 1/8W	17 AF 384
50	R5	Res, 475K, 1%, 1/8W	17 AF 449
51	R8	Res, 2.00K, 1%, 1/8W	17 AF 221
52		Not Used	
53	R22	Res, 40.2K, 1%, 1/8W	17 AF 346
54		Not Used	
55		Not Used	
56		Not Used	
57	R16	Res, 100, 5%, 1/4W	17 AH 697
58	R1	Res, 220, 5%, 1/4W	17 AH 713
59		Not Used	
60	R25	Res, 6.8K, 5%, 1/4W	17 AH 785
61	R14,15,18	Res, 10K, 5%, 1/4W	17 AH 793
62	R26, 32	Res, 4.7K, 5%, 1/4W	17 AH 777
63		Not Used	
64	R19	Res, 3.9K, 5%, 1/4W	17 AH 773
65	R20	Res, 12K, 5%, 1/4W	17 AH 797

TABLE 6.4 CONTROLLER DISPLAY BOARD PCB1, PARTS LIST

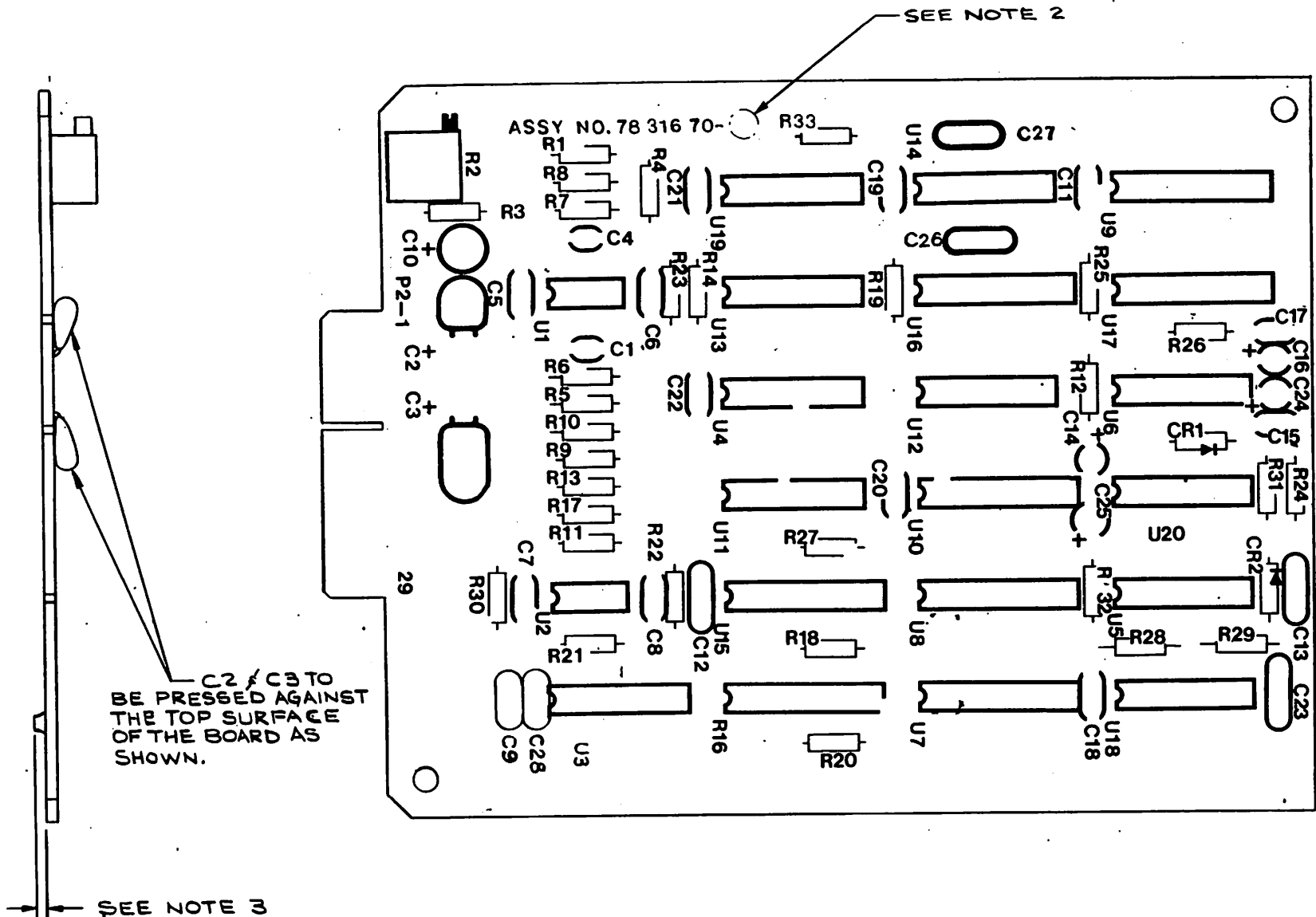
(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
66	R36	Res, 1.87K, 1%, 1/8W	17 AF 218
67	R34	Res, 2.67K, 1%, 1/8W	17 AF 233
68	R21	Res, 130K, .1%, 1/8W	17 AN 303
69	R13	Res. 47, 5%, 1/2W	17 AB 121
70	R27	Res, 120. 5%, 1/2W	17 AB 151
71	R28, 29	Res, 240, 5%, 1/2W	17 AB 172
72		Not Used	
73		Not Used	
74	XDS1, 2, 3	Socket, I.C. 14 DIP	17 AP 096
75	XDS6	Socket, I.C. 16 DIP	17 AP 097
76	S4	Thumbwheel Switch Assembly	17 682 50
77	S1	Switch Slide, 3PDT	17 682 54
78	S2,3	Switch, PB, SPDT (See Note 1)	17 682 55
79	Q1	Transistor, 2N4126, PNP	17 625 57
80	Q2	Transistor, 2N4124, NPN	17 625 58
81	S3	Switch, PB, SPDT (See Note 2)	17 682 64
82		Spacer, Switch (See Note 2)	78 315 31

NOTE 1. Item 78 is used for replacement of switch S3 (SILENCE/RESET) on PCB1 assemblies 78 315 70-1 through -4 only; not interchangeable with item 81.

NOTE 2. Items 81 and 82 are used for replacement of switch S3 (SILENCE/RESET) on PCB1 assemblies 78 315 70-5 and above; not interchangeable with item 78.

FIGURE 6.5 PARTS LOCATION DIAGRAM, CONTROLLER
MEASUREMENT/DIGITAL BOARD PCB2



NOTES:

1. ASSEMBLY OF BOARD TO CONFORM WITH SPEC. NO. 00945 12.
2. MARK ASSEMBLY REVISION LEVEL IN AREA SHOWN WITH .09 .03 HIGH CHARACTERS USING A PERMANENT SMUDGE-PROOF INK, COLOR TO CONTRAST WITH BOARD MATERIAL.
3. COMPONENT LEAD AND SOLDER BUILD UP NOT TO EXCEED .06 MAX. FROM SURFACE OF BOARD.

TABLE 6.5 CONTROLLER MEASUREMENT/DIGITAL BOARD PCB2, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CONTROLLER MEASUREMENT/DIGITAL BOARD	
		PCB2	78 316 70
1		Not Used	
2		Not Used	
3		Not Used	
4		Not Used	
5		Not Used	
6		Not Used	
7		Not Used	
8		Not Used	
9	C2,3	Cap, 2.2 MFD, $\pm 10\%$, 50V (See Note 1)	17 AW 218
10	C10	Cap, 4.7 MFD, $\pm 10\%$, 35V (See Note 1)	17 AW 224
11	C1,4	Cap, .001 MFD, $\pm 10\%$, 50V	17 BF 377
12	C2,3,10,	Cap, 4.7 MFD, $\pm 10\%$, 35V (See Note 1)	17 AW 224
13	C5,6,7,8, 9,11,15, 17,18,19, 20,21,22,28	Cap, .01 MFD, +80 -20%, 50V	17 BF 388
14	C12,13,23, 26, 27	Cap, .10 MFD, $\pm 20\%$, 50V	17 430 57
15	C14,16	Cap, 1.0 MFD, $\pm 10\%$, 35V	17 AW 212
16	C24,25	Cap, 2.2 MFD, $\pm 20\%$, 25V	17 405 22
17		Not Used	
18	CR1,2	Diode, 1N914	17 AR 500
19		Not Used	
20		Not Used	
21	U1,2	I.C. 1458, Dual Op Amp	17 629 36
22	U3	I.C., 3302, Quad Comparator	17 629 58
23	U4	I.C., CMOS, 4066, 4 x Bilateral Sw.	17 630 76
24	U5	I.C., CMOS, 4069, Hex Inverter	17 629 92
25	U6	I.C., CMOS, 556, Dual Timer	17 632 09

NOTE 1. Items 9 and 10 used for replacement purposes on PCB2 78 316 70-8 and above. Item 12 used for replacement purposes on PCB2 78 316 70-7.

TABLE 6.5 CONTROLLER MEASUREMENT/DIGITAL BOARD PCB2, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
26	U7,8,16	I.C., CMOS, 4027, Dual JK FF	17 629 86
27	U9	I.C., CMOS, 4518, Dual 4 Bit Dec Counter	17 631 62
28	U10,17	I.C., CMOS, 4040, Binary Counter	17 629 89
29	U11	I.C., CMOS, 4075, 3 x 3 Input OR	17 631 78
30	U12	I.C., CMOS, 4071, 4 x 2 Input OR	17 630 34
31	U13	I.C., CMOS, 4081, 4 x 2 Input AND	17 630 02
32	U14,19,20	I.C., CMOS, 4001, 4 x 2 Input NOR	17 629 75
33	U15	I.C. CMOS, 4022B, Johnson Counter	17 632 11
34	U18	I.C., CMOS, 4011, 4 x 2 Input NAND	17 629 77
35		Not Used	
36		Not Used	
37		Not Used	
38	R28	Res, 47.5K, 1%, 1/8W Film	17 AF 353
39	R1	Res, 8.87K, 1%, 1/8W Film (See Note 2)	17 AF 283
40	R2	Res, Var, 500, .5W, PCB, HRZ ADJ (See Note 2)	17 AN 121
41	R3	Res, 4.12K, 1%, 1/8W Film	17 AF 251
42	R4,5,9, 11,17,21, 22,25,33	Res, 10.0K, 1%, 1/8W Film (See Note 2)	17 AF 288
43	R6,30	Res, 31.6K, 1%, 1/8W Film (See Note 2)	17 AF 336
44	R7,8	Res, 2.0K, 1%, 1/8W Film	17 AF 221
45	R10	Res, 4.02K, 1%, 1/8W Film	17 AF 250
46	R12,18,24, 27	Res, 1.0M, 1%, 1/8W Film	17 AF 480
47	R13	Res, 100K, 1%, 1/8W Film	17 AF 384
48	R14,19, 20,23	Res, 5.1K, 5%, 1/4W Carbon	17 AH 779
49	R16	Res, Ntwk, 8 @ 10K, 2%, .25 W/R	17 AU 530
50	R26	Res, 715K, 1%, 1/8W Film	17 AF 466

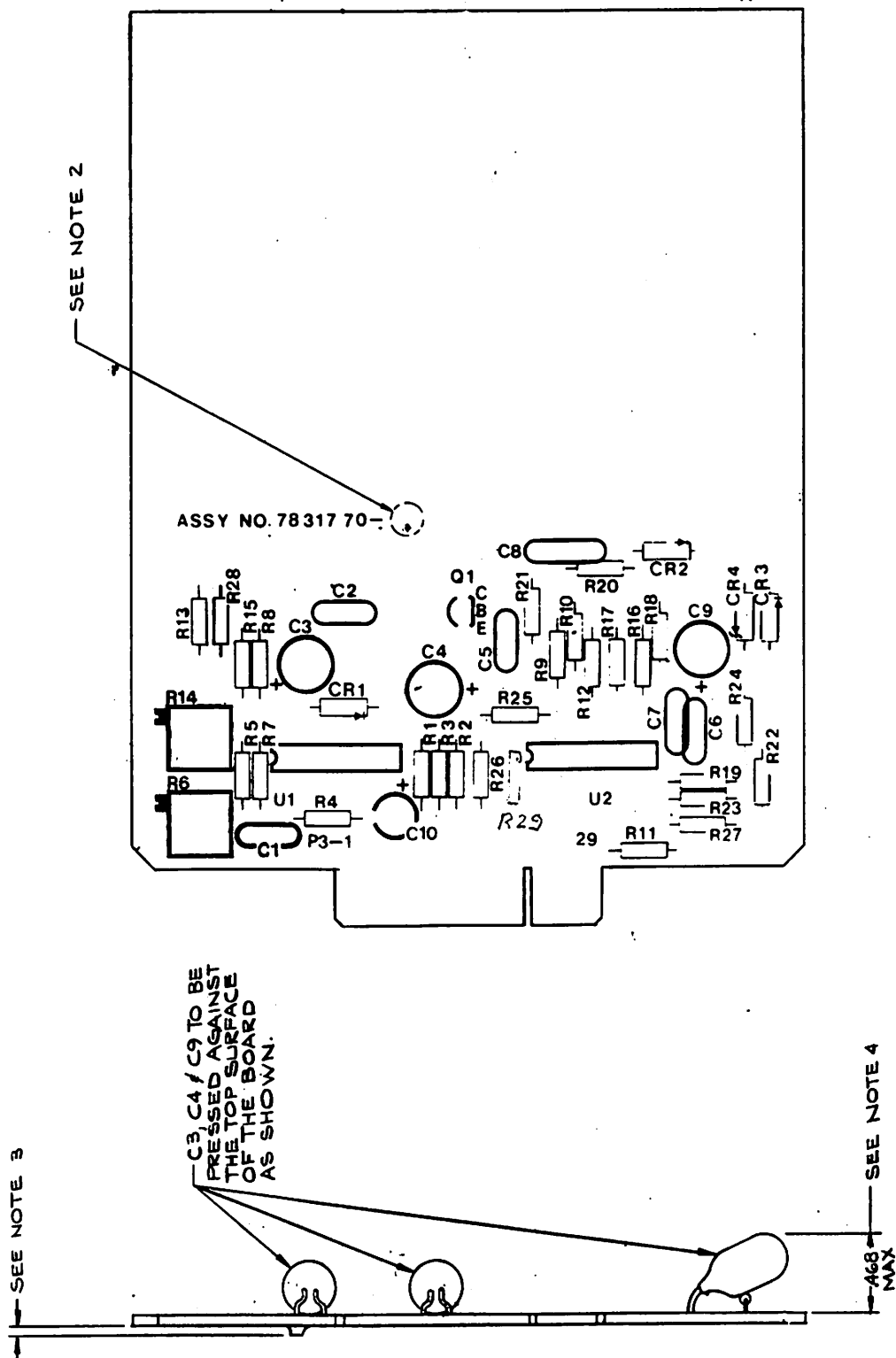
NOTE 2. When replacing resistors R1, R2, R4, R5 and R6 on PCB2 assembly 78 316 70-7, use part numbers listed in Items 39, 40, 42 and 43.

TABLE 6.5 CONTROLLER MEASUREMENT/DIGITAL BOARD PCB2, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
51	R29	Res, 200K, 1%, 1/8W Film	17 AF 413
52	R31,32	Res, 1M, 5%, 1/4W Carbon	17 AH 889
53	R1	Res, 34.8K, 1%, 1/8W Film (See Note 3)	17 AF 340
54	R2	Res, Var, 2.0K, .5W, PCB, HRZ ADJ	17 AN 121
		(See Note 3)	
55	R4	Res, 35.7K, 1%, 1/8W Film (See Note 3)	17 AF 341
56	R5	Res, 10.7K, 1%, 1/8W Film (See Note 3)	17 AF 291
57	R6	Res, 69.8K, 1%, 1/8W Film (See Note 3)	17 AF 369

NOTE 3. When replacing resistors, R1, R2, R4, R5 and R6 on PCB2 assembly 78 316 70-8 and above, use part numbers listed in items 53 through 57.



- NOTES:
1. ASSEMBLY OF BOARD TO CONFORM WITH SPEC. NO. 00 946 12.
 2. MARK ASSEMBLY REVISION LEVEL IN AREA SHOWN WITH .001 HIGH CHARACTERS USING A PERMANENT SMUDGE-PROOF INK. COLOR TO CONTRAST WITH BOARD MATERIAL.
 3. COMPONENT LEAD AND SOLDER BUILD UP NOT TO EXCEED .08 MAX. FROM SURFACE OF BOARD.
 4. COMPONENT HEIGHT NOT TO EXCEED .468.

FIGURE 6.6 PARTS LOCATION DIAGRAM, CONTROLLER CONTROL BOARD PCB3

TABLE 6.6 CONTROLLER CONTROL BOARD PCB3, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CONTROLLER CONTROL BOARD PCB3	78 317 70
1		Not Used	
2		Not Used	
3		Not Used	
4		Not Used	
5		Not Used	
6		Not Used	
7		Not Used	
8		Not Used	
9		Not Used	
10		Not Used	
11	C1,2,6,7	Cap, .01 MF, +80 -20%, 50V	17 BF 388
12	C3,4	Cap, 33 MF, 10%, 25V	17 AW 248
13	C5	Cap, .1 MF, 20%, 50V	17 430 57
14	C8	Cap, .22 MF, 20%, 50V	17 430 04
15	C9	Cap, 100 MF, 10%, 20V	17 AW 263
16	C10	Cap, 10 MFD, 10%, 25V	17 AW 236
17		Not Used	
18		Not Used	
19		Not Used	
20		Not Used	
21	CR1,2,3	Diode, 1N914	17 AR 500
22	CR4	Diode, 1N5231B	17 502 08
23		Not Used	
24		Not Used	
25		Not Used	
26	U1,2	I.C., 3403	17 629 70
27		Not Used	
28		Not Used	
29		Not Used	
30		Not Used	

TABLE 6.6 CONTROLLER CONTROL BOARD PCB3, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
31	R28	Res, 3.01K, 1%, 1/8W	17 AF 238
32	R1,7,8, 10,15,20,24	Res, 10K, 1%, 1/8W	17 AF 288
33	R2	Res, 15K, 1%, 1/8W	17 AF 305
34	R3	Res, 4.99K, 1%, 1/8W	17 AF 259
35	R4	Res, 8.06K, 1%, 1/8W	17 AF 279
36	R5	Res, 6.98K, 1%, 1/8W	17 AF 273
37	R6	Pot., Horizontal Adj., 2K	17 AN 121
38	R9	Res, 1M, 1%, 1/8W	17 AF 480
39	R11	Res, 11.3K, 1%, 1/8W	17 AF 293
40	R12	Res, 22.6K, 1%, 1/8W	17 AF 322
41	R13	Res, 15.8K, 1%, 1/8W	17 AF 307
42	R14	Pot, Horizontal Adj., 10K	17 AN 127
43	R16	Res, 14.7K, 1%, 1/8W	17 AF 304
44	R17	Res, 30.1K, 1%, 1/8W	17 AF 334
45	R18	Res, 10.2K, 1%, 1/8W	17 AF 289
46	R21,29	Res, 90.9K, 1%, 1/8W	17 AF 380
47	R22	Res, 100, 1%, 1/8W	17 AF 096
48	R23,27	Res, 100K, 1%, 1/8W	17 AF 384
49	R25	Res, 47.5K, 1%, 1/8W	17 AF 353
50	R26	Res, 2K, 1%, 1/8W	17 AF 221
51	R19	Res, 20K, 1%, 1/8W	17 AF 317
52		Not Used	
53		Not Used	
54		Not Used	
55	Q1	Transistor, PNP, 2N4126	17 625 57

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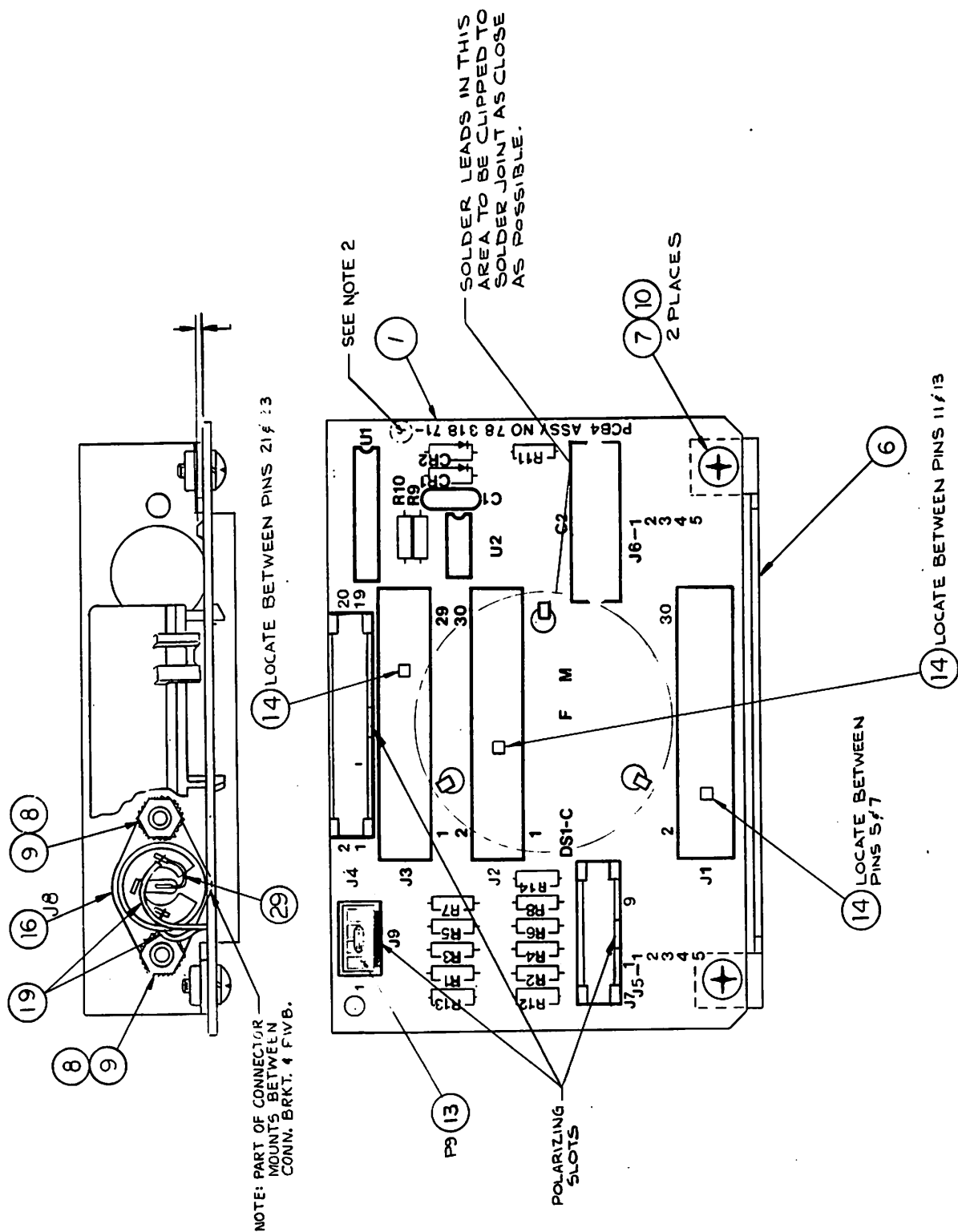


FIGURE 6.7 PARTS LOCATION DIAGRAM, CONTROLLER MOTHER BOARD PCB4

TABLE 6.7 CONTROLLER MOTHER BOARD PCB4, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CONTROLLER MOTHER BOARD PCB4, CM78-1 Series 002 and CM78-2 Series 00	78 931 76
-		CONTROLLER MOTHER BOARD PCB4, CM78-2 Series 01	78 318 71
1		Not Used	
2		Not Used	
3		Not Used	
4		Not Used	
5		Not Used	
6		Bracket, Connector	78 318 25
7		Scr, 4-40 x 1/4, TR PH SS	99 010 56
8		Wshr, #4 LK SHE SS	99 121 37
9		Nut, No. 4 HX SS Small Pattern	99 103 35
10		Wshr, No. 4 LK SP SS	99 121 36
11	C1	Cap, .001 MF, 20%, 1KV	17 BF 083
12	*	Conn, PC HDR, LKG, SGL Row 4 Posn	17 BP 803
13	*	Plug, Assy, Alarm enable	78 327 50
14		Key, Polarizing	17 BP 642
15	J1,2,3	Conn, Rcpt, Card Edge, PC Mtg	17 BP 632
16	J8	Conn, Rcpt, Female, 3 Posn.	17 724 26
17	J4	Conn, Rcpt. Male, 20 Contacts	17 BP 653
18	J7	Conn, Rcpt, Male, 10 Contacts	17 732 34
19		Not Used	
20		Not Used	
21	CR1,2	Diode, 1N913	17 AR 500
22		Not Used	
23	*	I.C., CMOS, 3634	17 630 11
24	U2	I.C., CMOS, 3633N	17 629 52
25	U1	I.C., CMOS, 4049	17 630 45
26	R12*	Res, 69.8K, 1%, 1/8W Film	17 AF 369
27	XDS1	Socket, Transducer	17 652 71
28	DS1	Transducer, Tone (2.9 KHz)	17 652 72
29		Not Used	
30	R1	Res, 2K, 1%, 1/8W Film	17 AF 221

* PCB4 - 78 318 71 only.

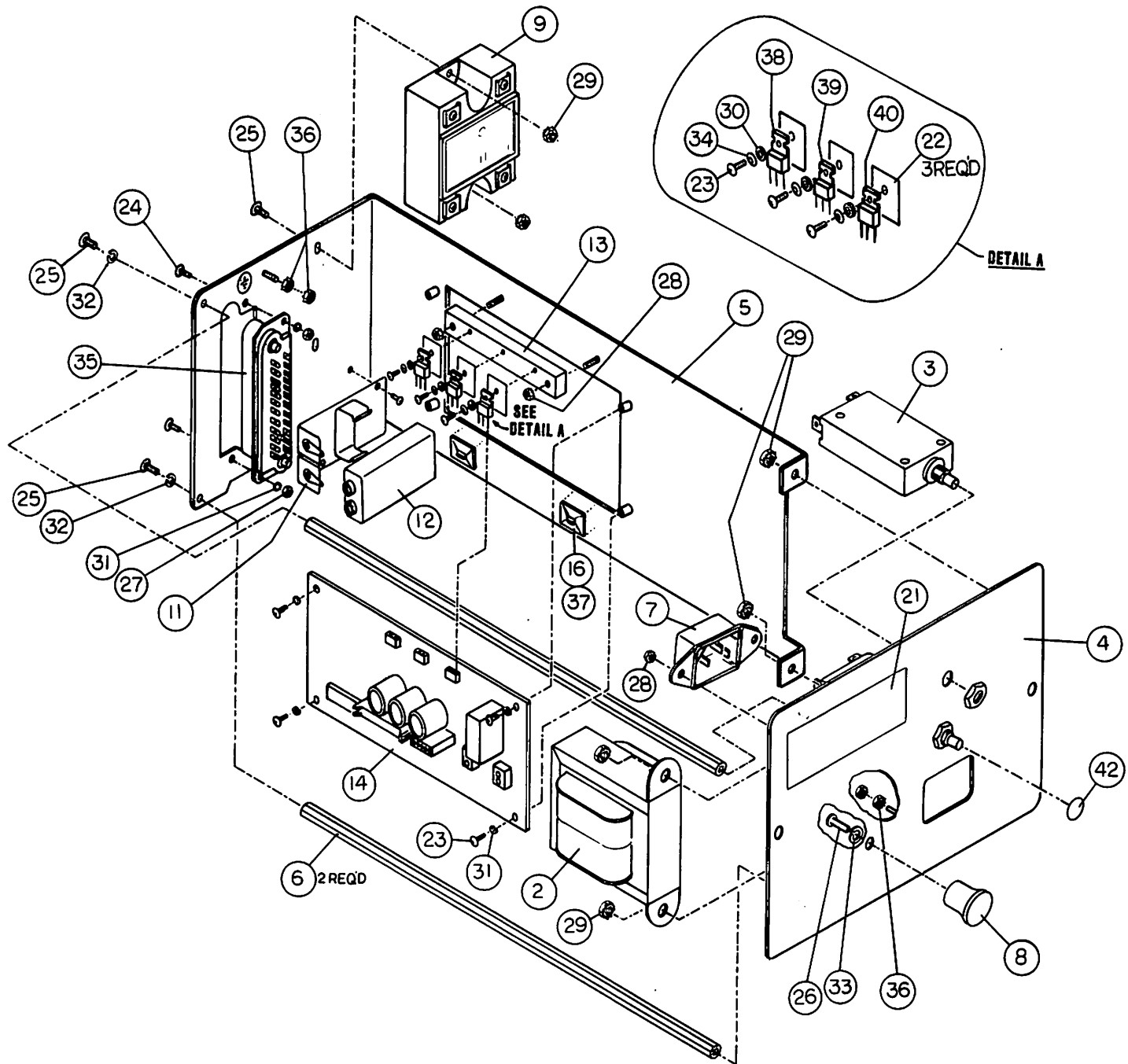
TABLE 6.7 CONTROLLER MOTHER BOARD PCB4, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
31	R2,R13*	Res, 20K, 1%, 1/8W, Film	17 AF 317
32	R3	Res, 10K, 1%, 1/8W Film	17 AF 288
33	R4	Res, 4.99K, 1%, 1/8W Film	17 AF 259
34	R5	Res, 200K, 1%, 1/8W Film	17 AF 413
35	R6	Res, 100K, 1%, 1/8W Film	17 AF 384
36	R7	Res, 49.9K, 1%, 1/8W Film	17 AF 355
37	R8	Res, 24.9K, 1%, 1/8W Film	17 AF 326
38	R9	Res, 3.9M, 5%, 1/4W Carbon	17 AA 475
39	R10	Res, 100K, 5%, 1/4W Carbon	17 AA 361
40	R11	Res, 68, 5%, 1/4W Carbon Film	17 AH 689

* R13 – 78 318 71 only.

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280Vac LINE FILTER NOT SHOWN.

FIGURE 6.8 PARTS LOCATION DIAGRAM, POWER MODULE ASSEMBLY

TABLE 6.8 POWER MODULE ASSEMBLY, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		POWER MODULE ASSEMBLY:	
		English Labeling, 110/120V	78 306 70
		Spanish Labeling, 110/120V	78 306 71
		French Labeling, 110/120V	78 306 72
		English Labeling, 220/240V	78 306 80
		Spanish Labeling, 220/240V	78 306 81
		French Labeling, 220/240V	78 306 82
		German Labeling, 220/240V	78 306 83
		English Labeling, 100V	78 306 90
-		Chassis Assembly, 110/120V	78 306 20
-		Chassis Assembly, 220/240V	78 306 21
-		Chassis Assembly, 100V	78 306 22
1		Not Used	
2	T1	Transformer Assembly, 110/120V	78 307 70
	T1	Transformer Assembly, 220/240V	78 307 80
	T1	Transformer Assembly, 100V	78 307 90
3	CB1,CB2	Circuit Breaker, 10A (See Note 1)	17 BH 154
	CB1,CB2	Circuit Breaker, 5A (See Note 2)	17 BH 150
4		Plate, End, Pwr Chassis	78 306 17
5		Chassis, Power	78 306 18
6		Spacer, Power Chassis	78 306 16
7		Power Connector Assembly	78 306 65
8		Knob, Plastic, Black, 1/4-20 THD	78 155 43
9	K2	Relay, Solid State, 240V, 10A (100V and 110/120V Power Modules)	68 903 83
	K2	Relay, Solid State, 240V, 10A (VDE) (220/240V Power Modules)	68 903 84
10		Not Used	
11		Battery Holder Assembly	78 306 60
12		Battery 7.5V, Rechargeable	17 807 65
13		Heatsink, Power Ch., Volt Regulator	78 306 19

NOTE 1. CB1 and CB2 are 10A (first production) or 13A part no. 17 BH 156 (later production). CB2 replaced with item 42 in later production.

NOTE 2. CB1 and CB2 changed to 7A Part No. 17 BH 152 in later production.

TABLE 6.8 POWER MODULE ASSEMBLY, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
14		PCB 1 Assy, Power Supply, Series 00	78 320 70
		Power Module, (Refer to Table 6.9)	
		PCB 1 Assy, Power Supply, Series 01	78 320 71
		Power Module (Refer to Table 6.9A)	
15		Not Used	
16		Clip, Cord, Retaining	17 061 87
17		Not Used	
18		Not Used	
19		Not Used	
20		Not Used	
21		Tag, Data	78 306 40
		Tag, Data, IEC 601-1	78 306 47
22		Insulator, Xstr, Therm Cond.	17 061 19
23		Screw, 4-40 x 1/4 TR PH SS	99 010 56
24		Screw, 4-40 x 3/8 TR PH SS	99 011 07
25		Screw, 8-32 x 3/8 TR PH SS	99 031 38
26		Screw, 1/4-20 x 3/8 TR PH SS	99 055 03
27		Nut, 4-40 HX SS	99 103 00
28		Nut, 4-40 HX KEPS S CA	99 103 33
29		Nut, 8-32 HX KEPS S CA	99 106 32
30		Wshr, Shoulder, Nyl	99 121 52
31		Wshr, No. 4 LK SP SS	99 121 36
32		Wshr, No. 8 LK SP SS	99 122 95
33		Wshr, 1/4 LK SP SS	99 125 53
34		Wshr, Compression	99 121 66
35		Connector, Recpt, Fem, 24 Posn.	17 BP 644
36		Nut, 6-32 HX KEPS S CA	99 105 34
37		Not Used	
38*	VR1	Regulator, 78M12UC (500 MA) +12V	17 AT 003
38A**	VR1,2	Regulator, Modified, Pos. 7.5W, 500 MA	78 306 45

* Series 00 Power Module

** Series 01 Power Module

TABLE 6.8 POWER MODULE ASSEMBLY, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
39*	VR2	Regulator, 78M05UC (500 MA) +5V	17 AT 000
40*	VR3	Regulator, 79M12AUC (500 MA) -12V	17 AT 013
40A**	VR3	Regulator, Modified, Neg, 7.5W, 500 MA	78 306 46
41		Not Used	
42		Button, Plug, Plastic (See Note 3)	78 306 31
43		Filter, Line, EMI (280 Vac)	17 585 47
44		Filter, Mounting Plate	78 306 13
45		Mtg Strap, Filter Mtg Plate	78 306 14
46		Screw, 8-32-5/8" TR, PH, SS	99 032 57
47		Wshr, PL #8, 3/4" O.D.	99 123 32
48		Wiring Harness, 230 Vac	78 992 96

* Series 00 Power Module

** Series 01 Power Module

NOTE 3. Item 42 replaces CB2 in later production.

IICS
PARTS LIST

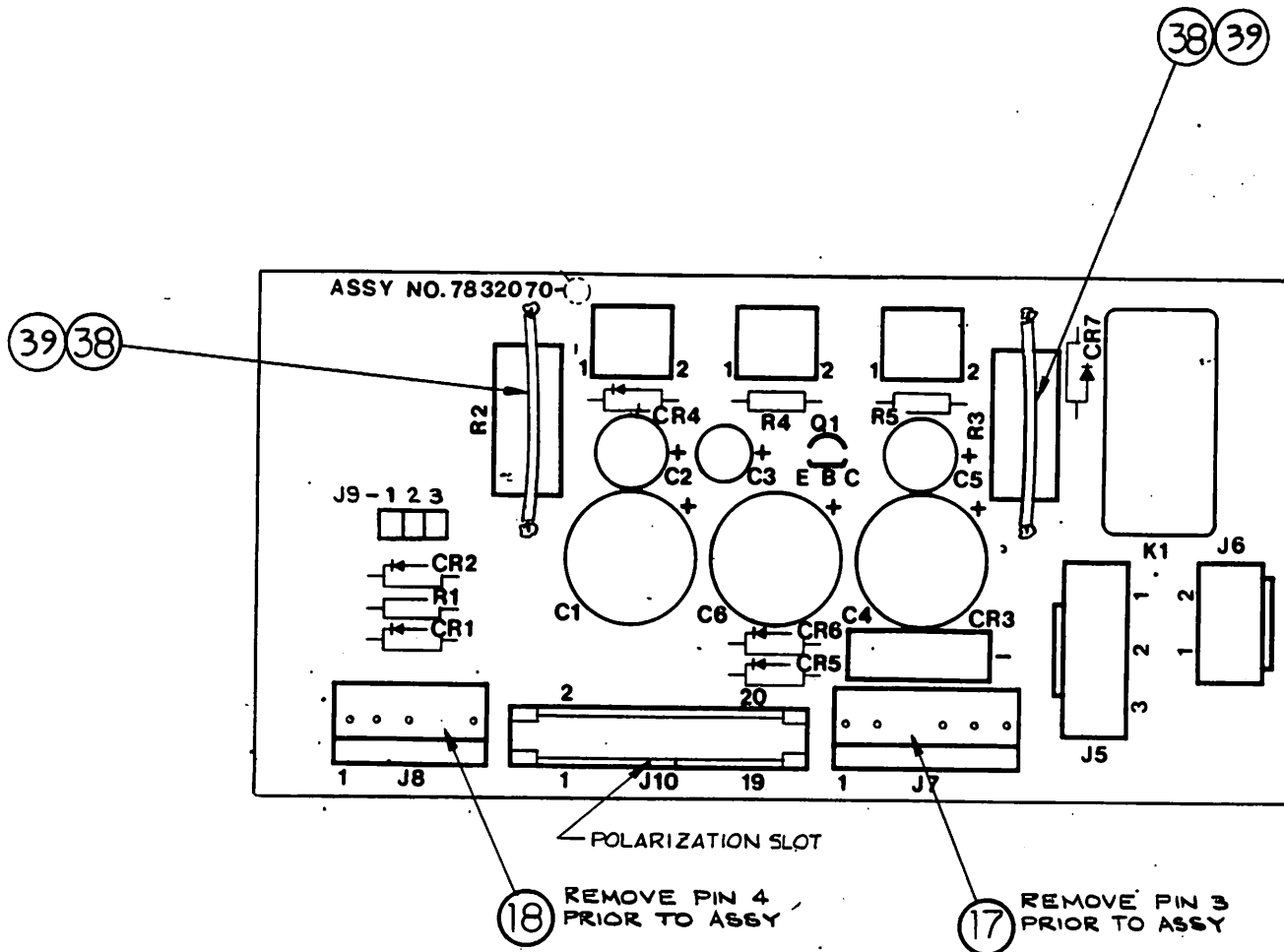


FIGURE 6.9 PARTS LOCATION DIAGRAM, POWER MODULE POWER SUPPLY
BOARD PCB1, (SERIES 00 POWER MODULE)

**TABLE 6.9 POWER MODULE POWER SUPPLY BOARD PCB1,
(SERIES 00 POWER MODULE), PARTS LIST**

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-	.....	POWER MODULE POWER SUPPLY BOARD PCB1 (See Note)	78 320 70
1	.....	Not Used	
2	.....	Not Used	
3	.....	Not Used	
4	.....	Not Used	
5	.....	Not Used	
6	.....	Not Used	
7	.....	Not Used	
8	.....	Not Used	
9	.....	Not Used	
10	 C1,4,6	Cap, 1000 MFD, 35V	17 AW 853
11	 C2,5	Cap, 56 MFD, 15V	17 AW 257
12	 C3	Cap, 4.7 MFD, 35V	17 AW 224
13	.....	Not Used	
14	 J9	Conn, P.C. Header, Sgl Row, 3 Posn	17 BP 373
15	 J6	Conn, Rcpt, Male, PC Mtg, 2 Posn	17 BP 647
16	 J5	Conn, Rcpt, Male, PC Mtg, 3 Posn.	17 BP 648
17	 J7	Conn, Rcpt, Male, PC Term, 6 Posn.	17 BP 029
18	 J8	Conn, Rcpt, Male, PC Term, 5 Posn.	17 BP 028
19	 J10	Conn, PC Header, Dbl Row 20 Posn.	17 BP 653
20	 XVR1, XVR2, XVR3	Conn, Rcpt, Female, PC Term, 3 Posn.	17 731 94
21	 CR1,2,4	Diode, 1N914	17 AR 500
22	 CR3	Rectifier Bridge, F.W., 1.5 AMP, 100V	17 AS 201
23	 CR5,6,7	Diode, 1N4001	17 AS 000
24	.....	Not Used	
25	.....	Not Used	

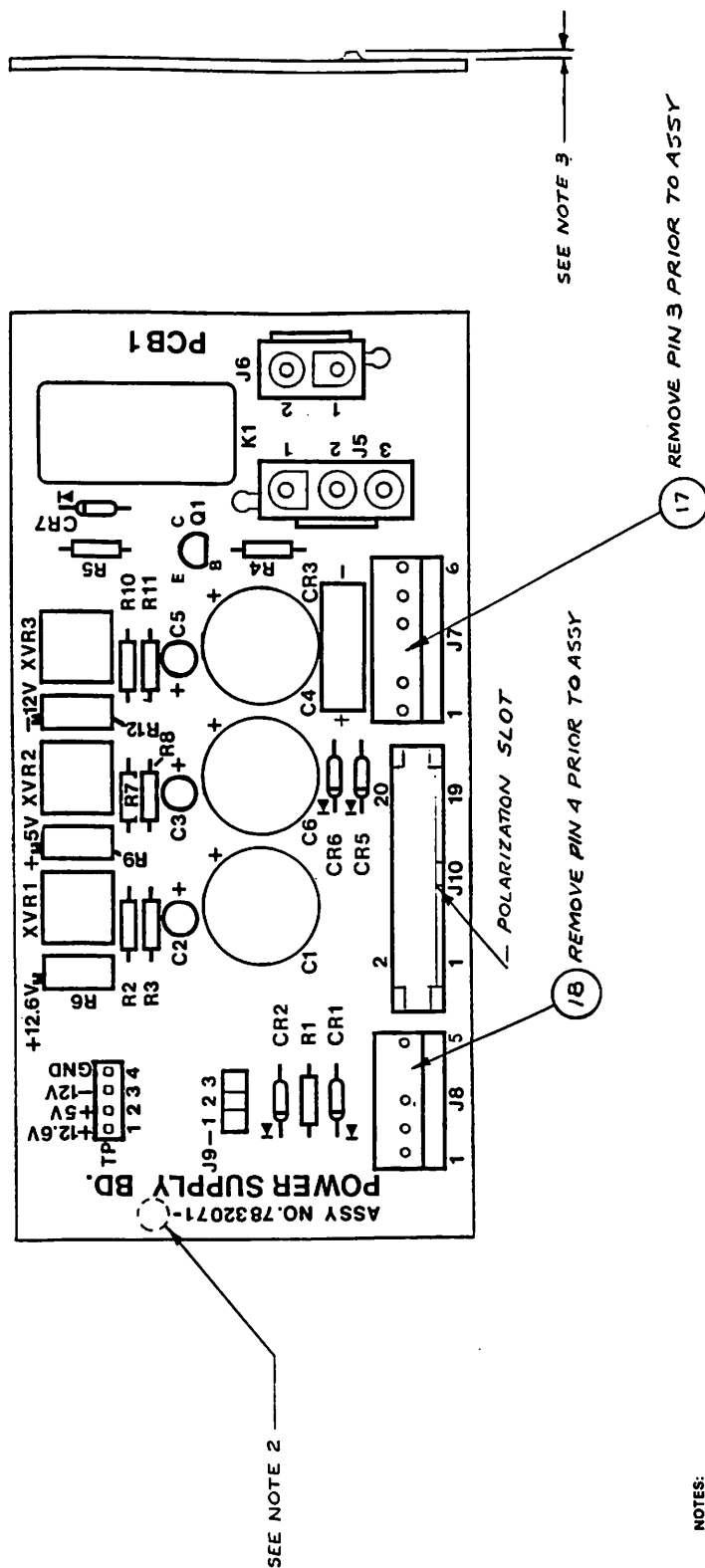
NOTE. If replacement of PCB1 is required, order Retrofit Kit, Part No. 78 930 72.

**TABLE 6.9 POWER MODULE POWER SUPPLY BOARD, PCB1,
(SERIES 00 POWER MODULE), PARTS LIST**

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
26	R1	Res,, 8.66K, 1%, 1/8W	17 AF 282
27		Not Used	
28	R4	Res, 3.74K, 1%, 1/8W	17 AF 247
29	R5	Res, 12.1K, 1%, 1/8W	17 AF 296
30		Not Used	
31		Not Used	
32		Not Used	
33		Not Used	
34		Not Used	
35	K1	Relay, SPDT, 12 VDC, 10A	17 652 66
36		Not Used	
37	Q1	Transistor, 2N4126	17 625 57

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- NOTES:
1. ASSEMBLY OF BOARD TO CONFORM WITH SPEC. NO. 00945 12.
 2. MARK ASSEMBLY REVISION LEVEL IN AREA SHOWN WITH .09 .03 HIGH CHARACTERS USING A PERMANENT SMUDGE-PROOF INK. COLOR TO CONTRAST WITH BOARD MATERIAL.
 3. COMPONENT LEAD AND SOLDER BUILD UP NOT TO EXCEED .06 MAX. FROM SURFACE OF BOARD.

FIGURE 6.9A PARTS LOCATION DIAGRAM, POWER MODULE POWER SUPPLY BOARD PCB1
(SERIES 01 POWER MODULE)

**TABLE 6.9A POWER MODULE POWER SUPPLY BOARD, PCB1
(SERIES 01 POWER MODULE), PARTS LIST**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		POWER MODULE POWER SUPPLY BOARD, PCB1	78 320 91
1		Not Used	
2		Not Used	
3		Not Used	
4		Not Used	
5		Not Used	
6		Not Used	
7		Not Used	
8		Not Used	
9		Not Used	
10	C1,4,6	Cap, 1000 MFD, 35V	17 AW 853
11	C2,3,5	Cap, 10 MFD, 25V	17 AW 236
12		Not Used	
13		Not Used	
14	J9	Conn, PC Header, Sgl Row, 3 Posn	17 BP 373
15	J6	Conn, Rcpt, Male, PC Mtg, 2 Posn	17 BP 647
16	J5	Conn, Rcpt, Male, PC Mtg, 3 Posn	17 BP 648
17	J7	Conn, Rcpt, Male, PC Term, 6 Posn	17 BP 029
18	J8	Conn, Rcpt, Male, PC Term, 5 Posn	17 BP 028
19	J10	Conn, PC Header, Dbl Row, 20 Posn	17 BP 653
20	XVR1,2,3	Conn, Rcpt, Female, PC Term, 3 Posn	17 731 94
21	CR1,2	Diode, 1N914	17 AR 500
22	CR3	Rectifier, Bridge, F.W., 1.5A, 100V	17 AS 201
23	CR5,6,7	Diode, 1N4001	17 AS 000
24		Not Used	
25	R2,7,10	Res, 124 , 1%, 1/8W	17 AF 105
26	R8	Res, 274 , 1%, 1/8W	17 AF 138
27	R11	Res, 976 , 1%, 1/8W	17 AF 191
28	R3	Res, 1.02K, 1%, 1/8W	17 AF 293
29	R4	Res, 3.74K, 1%, 1/8W	17 AF 247
30	R1	Res, 8.66K, 1%, 1/8W	17 AF 282
31	R5	Res, 12.1K, 1%, 1/8W	17 AF 296
32		Not Used	
33		Not Used	
34	R6,9,12	Res, Variable, 200, 10%, 1/2W	17 AN 054
35		Not Used	
36	K1	Relay, SPDT, 12 VDC, 188	17 652 66
37		Not Used	
38	Q1	Transistor, 2N4126	17 625 57
39		Not Used	
40	TP1,2,3,4	Term, Strip, Bifurcated (4 Posn)	17 BG 013

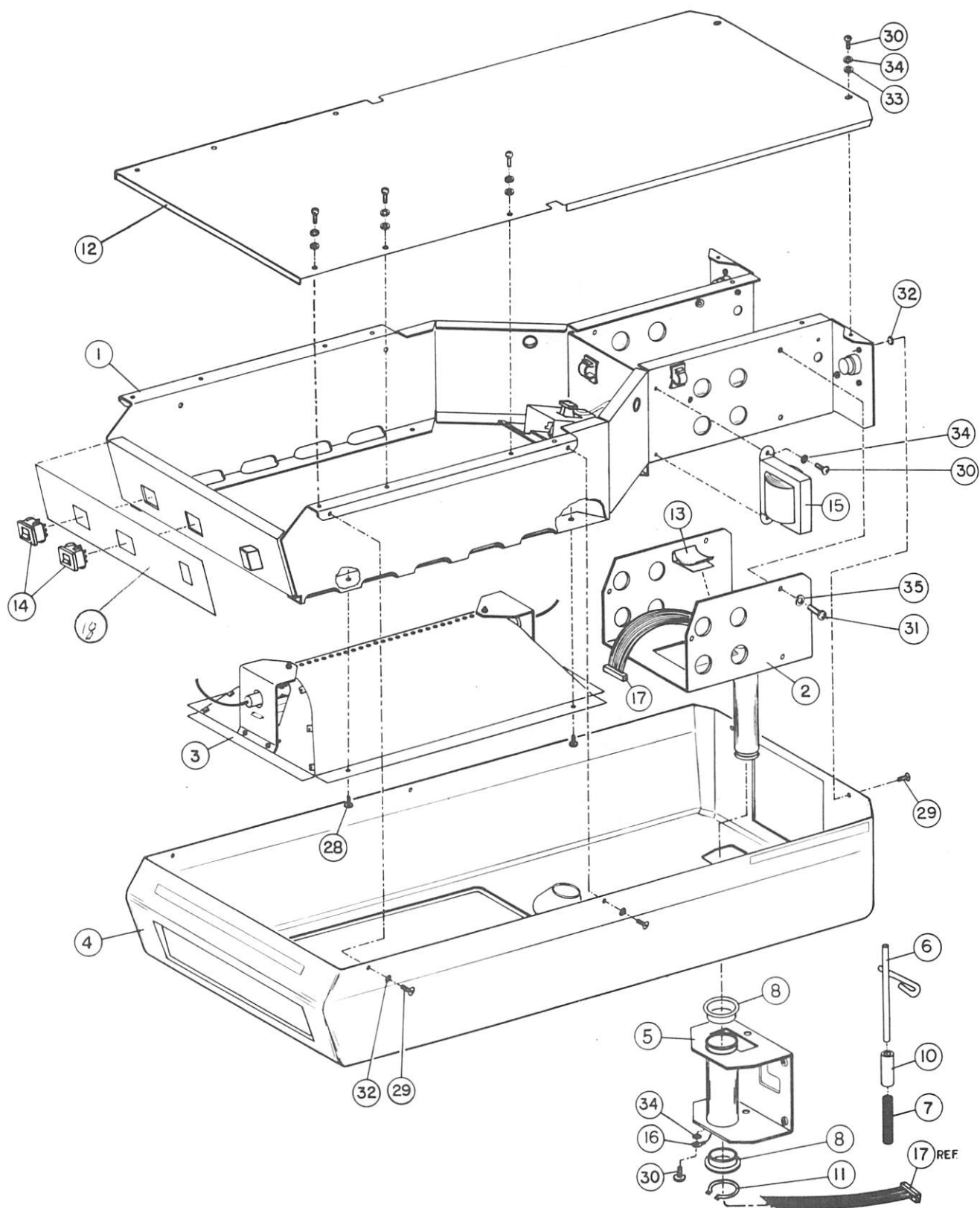


FIGURE 6.10 PARTS LOCATION DIAGRAM, WARMER MODULE ASSEMBLY
(INFANT INTENSIVE CARE SYSTEM, WALL MOUNTED INFANT
INTENSIVE CARE SYSTEM, AND WALL MOUNTED INFANT WARMER)

**TABLE 6.10 WARMER MODULE ASSEMBLY, PARTS LIST
(INFANT INTENSIVE CARE SYSTEM, WALL MOUNTED INFANT
INTENSIVE CARE SYSTEM, AND WALL MOUNTED INFANT WARMER)**

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		WARMER MODULE ASSEMBLY	
		INFANT INTENSIVE CARE SYSTEM:	
		English Labeling, 110/120V	78 265 70
		Spanish Labeling, 110/120V	78 265 71
		French Labeling, 110/120V	78 265 72
		English Labeling, 220/240V	78 265 80
		Spanish Labeling, 220/240V	78 265 81
		French Labeling, 220/240V	78 265 82
		German Labeling, 220/240V	78 265 83
		English Labeling, 100V	78 265 90
1		Warmer Module Subassembly	78 260 70
		(Refer to Table 6.11)	
2		Bracket, Pivot, Warmer Mtg.	78 265 28
3		Heater/Reflector Assembly	
		(Refer to Table 6.12)	
		110/120V	78 263 70
		220/240V	78 263 80
		100V	78 263 90
4		Hood, Warmer:	
		English Labeling, 110/120V	78 940 00
		Spanish Labeling, 110/120V	78 940 01
		French Labeling, 110/120V	78 940 02
		English Labeling, 220/240V	78 940 03
		Spanish Labeling, 220/240V	78 940 04
		French Labeling, 220/240V	78 940 05
		German Labeling, 220/240V	78 940 06
		English Labeling, 100V	78 940 07
5		Bracket, Pivot, Post Mtg.	78 265 00
6		Pin, Latching, Warmer Pivot	78 265 05
7		Spring, Compression	78 265 10
8		Bushing, Shouldered, Plastic	78 265 15
9		Bearing, Split, 1/4 I.D., Plastic	78 155 65
10		Spacer, .257 I.D. x .375 O.D. x 1.00 NYL	99 125 61
11		Ring, Rtnng, Ext., 1IP4 I.D., S, Z1	99 186 20

**TABLE 6.10 WARMER MODULE ASSEMBLY, PARTS LIST
(INFANT INTENSIVE CARE SYSTEM, WALL MOUNTED INFANT
INTENSIVE CARE SYSTEM, AND WALL MOUNTED INFANT WARMER)**

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
12		Screen, Top, Warmer	78 265 20
13		Clamp, Flat, Cable, Plastic	17 062 11
14	S2, S3	Switch, Rocker, 2PST	17 682 63
15	T2	Transformer Assy. 110/120V	78 265 95
	T2	Transformer Assy. 220/240V	78 265 96
	T2	Transformer Assy. 100V	78 265 97
16		Ground Wire Assy.	78 265 99
17		Interconnect Cable Assy.	67 100 18
18		Switch Panel Label, Eng	78 265 35
		Spn	78 265 36
		Frn	78 265 37
		Ger	78 265 38
19		Not Used	
20		Not Used	
21		Not Used	
22		Not Used	
23		Not Used	
24		Not Used	
25		Not Used	
26		Not Used	
27		Not Used	
28		Screw, 6-32 x 5/16, TR, PH, SS Nylock	99 023 03
29		Screw, 6-32 x 3/8, OV, PH, SS, Nylock	99 023 45
30		Screw, 8-32 x 3/8, TR, PH, SS	99 031 38
31		Screw, 1/4-20 x 3/8, RD, PH, SS	99 055 03
32		Washer, Finishing, #6 NYLON	99 122 44
33		Washer, Flat, #8	99 122 62
34		Washer, LK, SP, #8, SS	99 122 95
35		Washer, LK, SP, 1/4, SS	99 125 53

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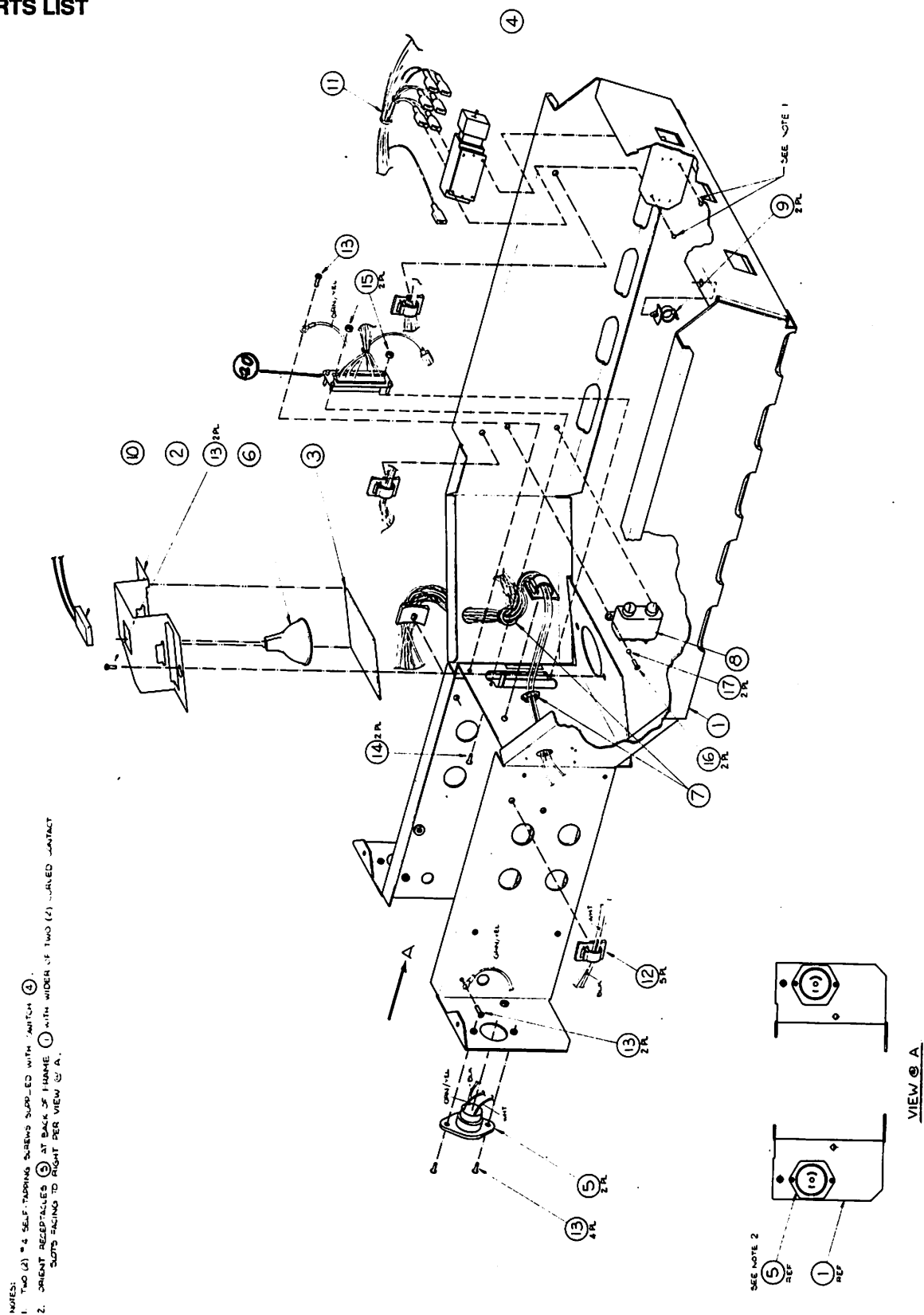


FIGURE 6.11 PARTS LOCATION DIAGRAM, WARMER MODULE SUBASSEMBLY

TABLE 6.11 WARMER MODULE SUBASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		WARMER MODULE SUBASSEMBLY	78 260 70*
1		Frame, Mtg, Warmer	78 260 01*
2		Bracket, Lamp Mtg.	78 260 25
3		Window, Glass, Square	78 260 36
4	S1	Switch, PB, 3PST, 16A, 250V	17 682 58
5	J11, J12	Conn, Rcpt, Fem, 3 Cont. Rtry.	17 732 29
6	DS1	Lamp, Incand, 12V, 50W	17 807 41
7		Grommet, .79 I.D., .88 Mtg, Hole, Plastic	78 260 11
8		Filter, Line, 115/250 VAC	17 585 38
9		Clip, Push-In, .35 Dia., Plastic	78 260 30
10		Connector Assy (Exam Light)	78 258 70
11		Wiring Harness Assy.	78 259 70
12		Clip, Wire Bundle	17 AZ 323
13		Screw, 6-32 x 5/16, TR, PH, SS Nylok	99 023 03
14		Screw, 4-40 x 1/4, TR, PH, SS	99 010 56
15		Nut, Hex, 4-40 KEPS, S, CA	99 103 33
16		Screw, 8-32 x 3/8, TR, PH, SS	78 031 38
17		Washer, LK, SP, #8, SS	99 122 95
18		Label, Switch Panel, English	78 265 35
		Label, Switch Panel, Spanish	78 265 36
		Label, Switch Panel, French	78 265 37
		Label, Switch Panel, German	78 265 38
19		Label, Lamp Replacement, English	78 265 50
		Label, Lamp Replacement, Spanish	78 265 51
		Label, Lamp Replacement, French	78 265 52
		Label, Lamp Replacement, German	78 265 53
20		Connector, Male, 24 Pin	17 BP 661

* Also order appropriate language labels (items 18 and 19).

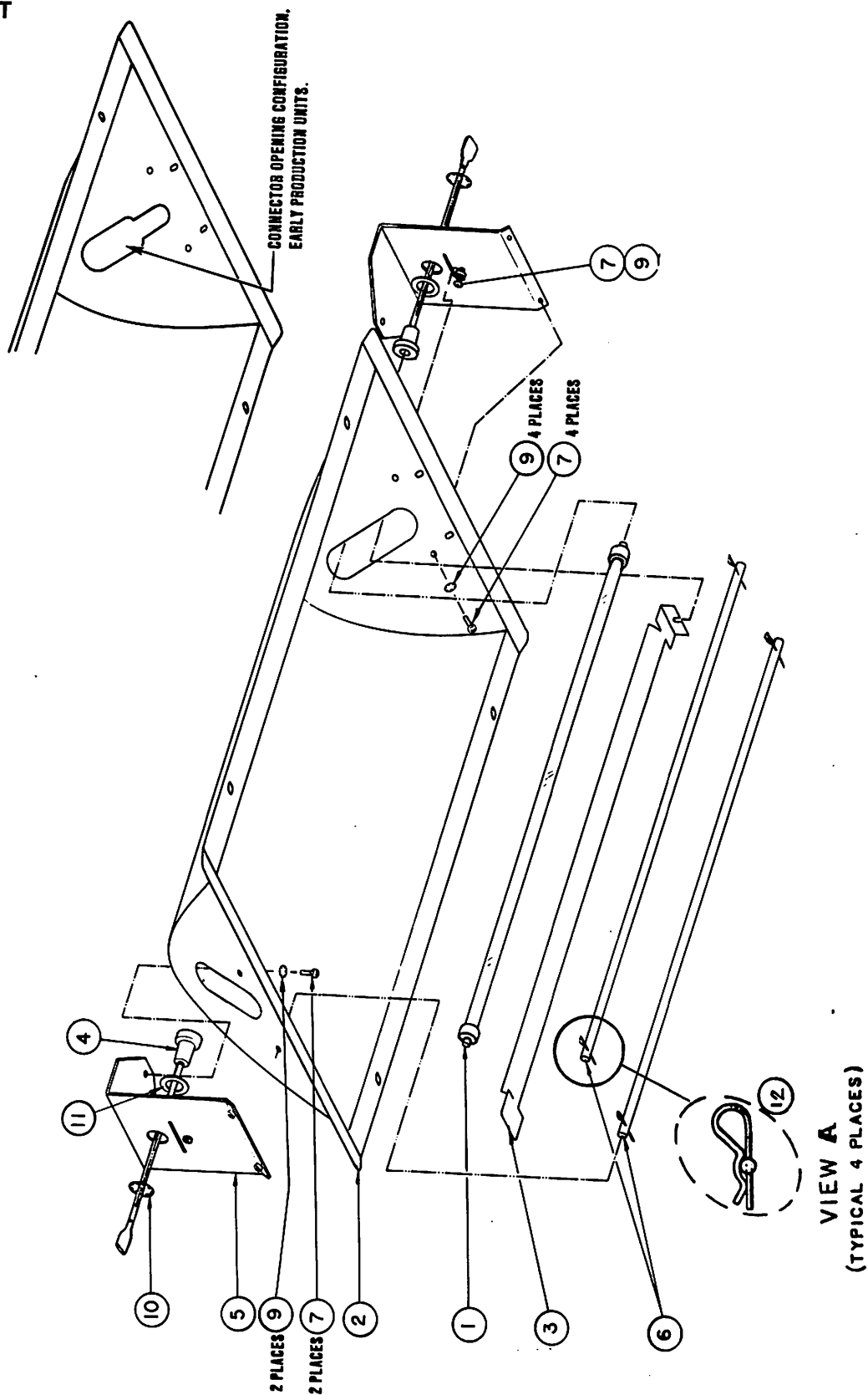


FIGURE 6.12 PARTS LOCATION DIAGRAM, HEATER/REFLECTOR ASSEMBLY

TABLE 6.12 HEATER/REFLECTOR ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		HEATER/REFLECTOR ASSEMBLY:	
		110/120V	78 263 70
		220/240V	78 263 80
		100V	78 263 90
1	HTR1	Heating Element, 120V	78 263 10
	HTR1	Heating Element, 240V	78 263 11
	HTR1	Heating Element, 100V	78 263 12
2		Reflector, Parabolic	78 263 20
3		Reflector, Curved (Replacement Kit)	78 930 81
4		Heater Connector Assy. Retro Kit	78 931 82
5*		Bracket, Support, Heater	78 263 35
6		Rod, Guard, Heater (Replacement Kit)	78 930 82
7		Screw, #6-32 x 1/4 LG TR PH SS	99 022 72
8		Not Used	
9		Wshr, #6, L, SI SS Flat	99 122 03
10*		Ring, Rtng, Ext. .525 Dia, Push-On SS	99 182 98
11*		Wshr, FL .578 I.D. x 1.06 OD x .06 THK	99 128 57
12		Cotter, Intl., Hair Pin (Part of Item 6)	99 140 97

* Included with Item 4.

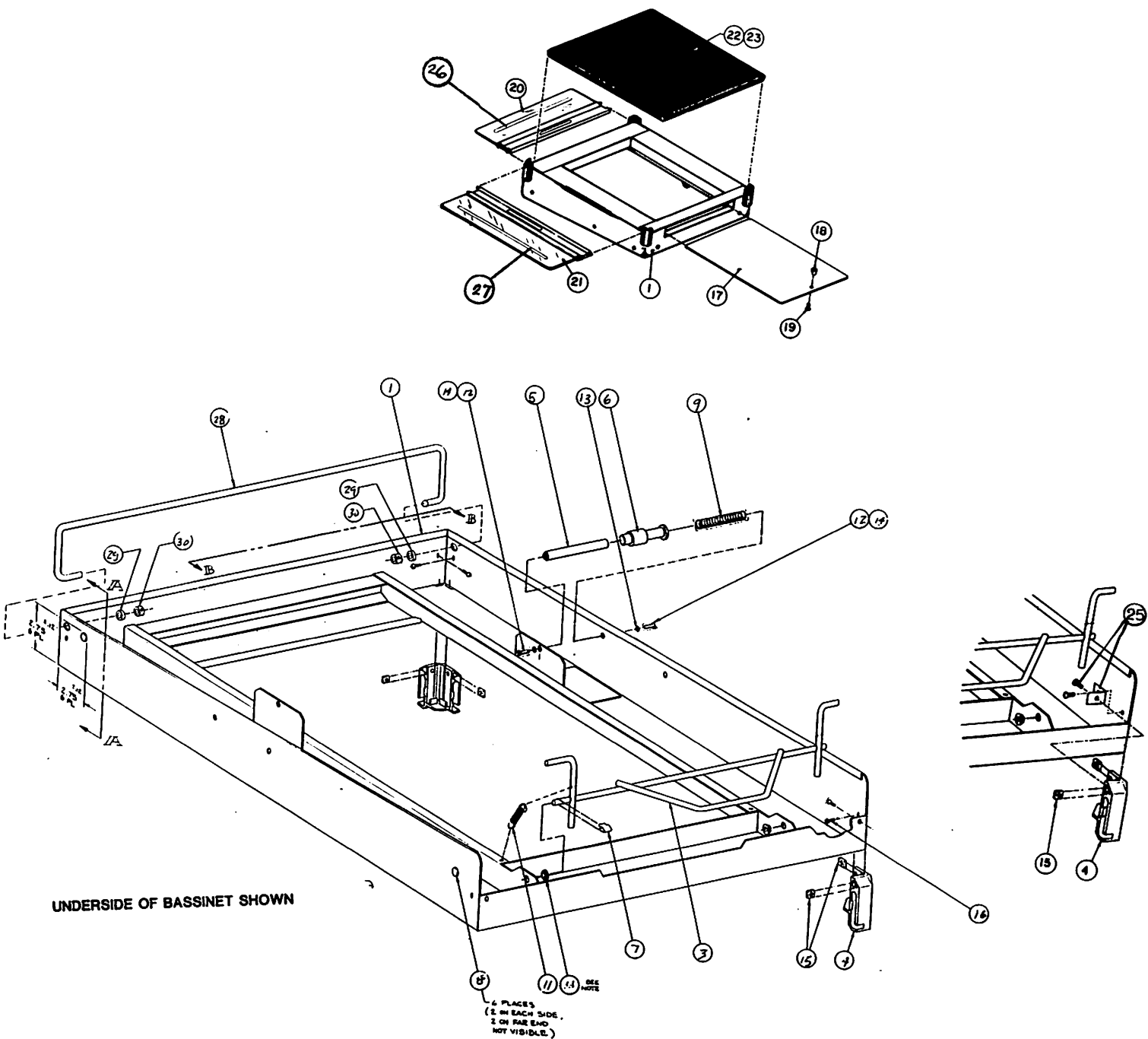


FIGURE 6.13 PARTS LOCATION DIAGRAM, BASSINET ASSEMBLY

TABLE 6.13 BASSINET ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		BASSINET ASSEMBLY w/o Handle	78 164 70
-		BASSINET ASSEMBLY w/Handle	78 164 76
1		Bassinet Subassembly, (Includes Items 2 through 16)	78 162 80
2		Support, Mattress	78 162 05
3		Elevator, Bassinet	78 162 10
4		Bracket, Corner, Panel Mtg.	78 162 20
5		Rod, Pivot, Shouldered	78 162 55
6		Bushing, Pivot/Release	78 162 60
7		Clip, Spring	78 162 65
8		Bumper	78 102 65
9		Spring, Compression	78 142 40
10		Bearing, Split, 5/16 ID, Plastic	78 155 66
11		Spring, Extension	78 162 61
12		Screw, 8-32 x 3/8, TR, PH, SS	99 031 38
13		Washer, Lock, Int., #8, SS	99 122 92
14		Not Used	
15		Nut, 6-32, SQ, S, Z1	99 105 05
16		Screw, 6-32 x 5/16, TR, PH, SS Nylock	99 023 03
17		Bassinet Shelf Panel Assy, X-Ray, (Includes items 18 and 19)	78 162 85
18		Knob, Plastic, Black	78 155 43
19		Screw, 1/4-20 x 1/2 FL, PH, SS 100°	99 055 89
20		End Panel Assy.	78 162 92
21		Side Panel Assy.	78 162 96
22		Mattress with Cover (Does not include item 23)	78 162 18
23		Panel, Mattress	78 162 13
24		Not Used	
25		Rear Corner Bracket Reinforcement Kit, (Not part of Bassinet Assembly 78 162 70)	78 930 70
26		Stripe, End Panel, Marked	78 162 00
27		Stripe, Side Panel, Marked	78 162 01
28		Handle, Bassinet (IICS)	78 162 52
29		Grommet 0.62 O.D. x .251 I.D. (IICS)	00 139 00
30		Shaft Coiler	78 162 53

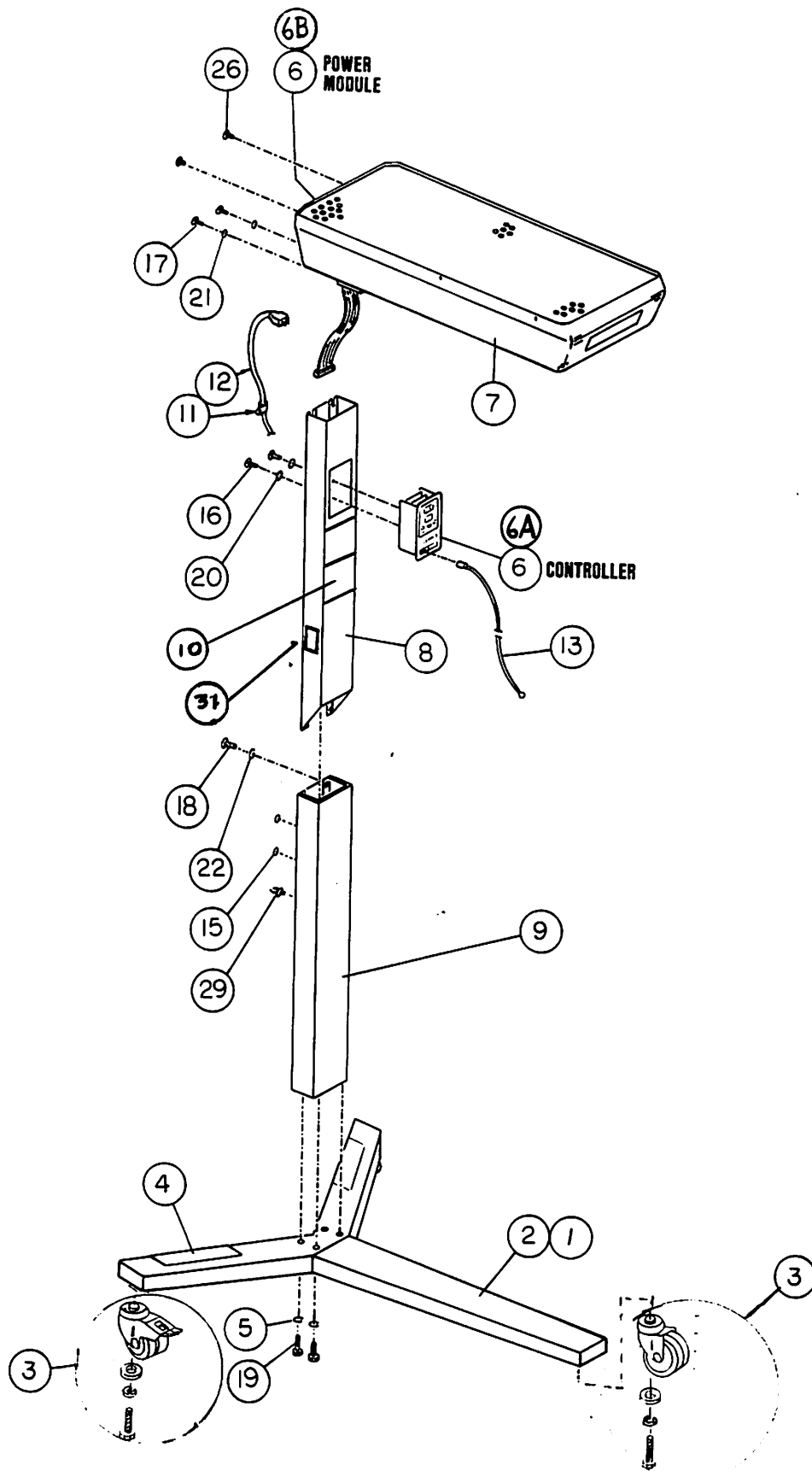


FIGURE 6.14 PARTS LOCATION DIAGRAM, FREE STANDING INFANT WARMER

(Change 7)

TABLE 6.14 FREE STANDING INFANT WARMER, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		FREE STANDING INFANT WARMER:	
		English Labeling, 110/120V	78 270 70
		Spanish Labeling, 110/120V	78 270 71
		French Labeling, 110/120V	78 270 72
		English Labeling, 220/240V	78 270 80
		Spanish Labeling, 220/240V	78 270 81
		French Labeling, 220/240V	78 270 82
		German Labeling, 220/240V	78 270 83
		English Labeling, 100V	78 270 90
1		Base Assembly, Infant Warmer, ...	78 270 98
		(Includes items 2 through 5)	
2		Base, Modified	78 285 10
3		Caster with Brake	78 285 27
		Caster without Brake	78 285 28
		Flat Washer	99 125 22
		Screw, 5/16 x 1.00 HX S, CA	99 064 71
		Lockwasher, 5/16"	99 126 32
4		Foot Grip	53 300 23
5		Washer, Lock, Split, 5/16, STL, CAD	99 126 32
6*		CONTROLLER/POWER MODULE PACKAGE:	
		(Refer to Tables 6.3 through 6.9)	
		English Labeling, 110/120V	78 308 70
		Spanish Labeling, 110/120V	78 308 71
		French Labeling, 110/120V	78 308 72
		English Labeling, 220/240V	78 308 80
		Spanish Labeling, 220/240V	78 308 81
		French Labeling, 220/240V	78 308 82
		German Labeling, 220/240V	78 308 83
		English Labeling, 100V	78 308 90
6A		CONTROLLER ASSEMBLY:	
		(Refer to Table 6.3 when Controller	
		is used with Series 01 Power Module)	
		English Labeling	78 305 70
		Spanish Labeling	78 305 71
		French Labeling	78 305 72
		German Labeling	78 305 73

* Contains Series 00 Power Module.

TABLE 6.14 FREE STANDING INFANT WARMER, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
6B		POWER MODULE ASSEMBLY (Series 01): (Refer to Tables 6.8 and 6.9A)	
		English Labeling, 110/120V	78 306 70
		Spanish Labeling, 110/120V	78 306 71
		French Labeling, 110/120V	78 306 72
		English Labeling, 220/240V	78 306 80
		Spanish Labeling, 220/240V	78 306 81
		French Labeling, 220/240V	78 306 82
		German Labeling, 220/240V	78 306 83
		English Labeling, 100V	78 306 90
7		WARMER MODULE ASSEMBLY: (Refer to Table 6.15)	
		English Labeling, 110/120V	78 270 75
		Spanish Labeling, 110/120V	78 270 76
		French Labeling, 110/120V	78 270 77
		English Labeling, 220/240V	78 270 85
		Spanish Labeling, 220/240V	78 270 86
		French Labeling, 220/240V	78 270 87
		German Labeling, 220/240V	78 270 88
		English Labeling, 100V	78 270 95
8		Post, Upper, Infant Warmer	
		English Labeling	78 940 20
		Spanish Labeling	78 940 21
		French Labeling	78 940 22
		German Labeling	78 940 23
9		Post, Lower, Infant Warmer	78 270 35
10		Placard, Precautions/Instructions	78 000 45
11		Clamp, Cable, .31 I.D.	17 732 42
12		Cable Assy. A.C. Power Cord	17 AZ 100
		Cable Assy. A.C. Power Cord, Export	17 AZ 200
13		Probe, Temp, Skin	68 209 70
14		Cover, Probe, Skin Temp (Box of 600)	26 901 81
15		Plug Button, 1/4 Mtg. Hole, Plastic	78 161 00
16		Screw, 6-32 x 3/8, TR, PH, SS	99 023 31
17		Screw, 10-32 x 5/8, TR, PH, SS	99 042 58

TABLE 6.14 FREE STANDING INFANT WARMER, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
18		Screw, 1/4-20 x 1/2 PN, PH, SS, Painted Head	99 055 90
19		Screw, 5/16 -18 x 1-3/4, HX, S, Z1	99 065 10
20		Washer, #6, LK SHI SS	99 122 19
21		Washer, #10, LK, INT, SS	99 123 92
22		Washer, LK, SP, 1/4, SS	99 125 53
23		Not Used	
24		Not Used	
25		Not Used	
26		Screw, 10-32 x 1/2, TR, PH, SS	99 042 01
27		Not Used	
28		Not Used	
29		Clip, Retaining, .38 dia., Plastic	78 444 05
30		Label, Temperature Conversion (Not shown. To be installed in location selected by user.)	68 111 35
31		Label, Mattress Height English	78 278 25
		Spanish	78 278 26
		French	78 278 27
		German	78 278 28

**IICS
PARTS LIST**

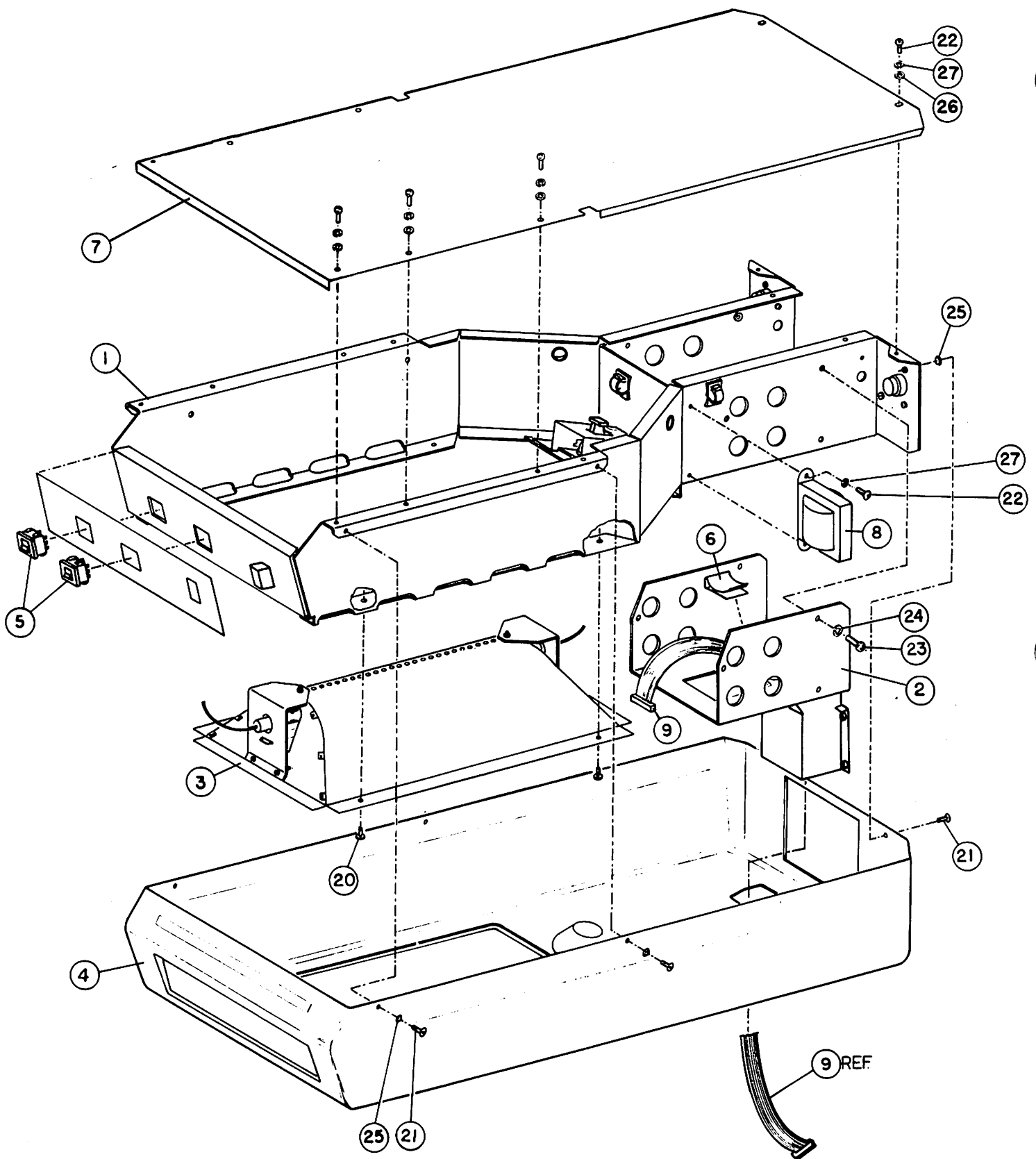


**FIGURE 6.15 PARTS LOCATION DIAGRAM, WARMER MODULE ASSEMBLY
(FREE STANDING INFANT WARMER)**

**TABLE 6.15 WARMER MODULE ASSEMBLY, PARTS LIST
(FREE STANDING INFANT WARMER)**

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		WARMER MODULE ASSEMBLY: (FREE STANDING INFANT WARMER)	
		English Labeling, 110/120V	78 270 75
		Spanish Labeling, 110/120V	78 270 76
		French Labeling, 110/120V	78 270 77
		English Labeling, 220/240V	78 270 85
		Spanish Labeling, 220/240V	78 270 86
		French Labeling, 220/240V	78 270 87
		German Labeling, 220/240V	78 270 88
		English Labeling, 100V	78 270 95
1		Warmer Module Subassembly (Refer to Table 6.11)	78 260 70
2		Bracket, Mtg., Warmer Module	78 270 17
3		Heater/Reflector Assembly: (Refer to Table 6.12)	
		110/120V	78 263 70
		220/240V	78 263 80
		100V	78 263 90
4		Hood, Warmer	
		English Labeling, 110/120V	78 940 08
		Spanish Labeling, 110/120V	78 940 09
		French Labeling, 110/120V	78 940 10
		English Labeling, 220/240V	78 940 11
		Spanish Labeling, 220/240V	78 940 12
		French Labeling, 220/240V	78 940 13
		German Labeling, 220/240V	78 940 14
		English Labeling, 100V	78 940 15
5	S2,3	Switch, Rocker, 2PST	17 682 63
6		Clamp, Flat Cable, Plastic	17 062 11
7		Screen, Top, Warmer	78 265 95
8	T2	Transformer Assembly, 110/120V	78 265 20
	T2	Transformer Assembly, 220/240V	78 265 96
	T2	Transformer Assembly, 100V	78 265 97

**TABLE 6.15 WARMER MODULE ASSEMBLY, PARTS LIST
(FREE STANDING INFANT WARMER)**

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
9		Interconnect Cable Assy.	67 100 18
10		Not Used	
11		Not Used	
12		Not Used	
13		Not Used	
14		Not Used	
15		Not Used	
16		Not Used	
17		Not Used	
18		Not Used	
19		Not Used	
20		Screw, 6-32 x 5/16, TR, PH, SS Nylock	99 023 03
21		Screw, 6-32 x 3/8, OV, PH, SS Nylock	99 023 45
22		Screw, 8-32 x 3/8, TR, PH, SS	99 031 38
23		Screw, 1/4-20 x 3/8, RD, PH, SS	99 055 03
24		Washer, LK, SP, 1/4, SS	99 125 53
25		Washer, Finishing, #6 Nylon	99 122 44
26		Washer, Flat, #8	99 122 62
27		Washer, LK, SP, #8, SS	99 122 95

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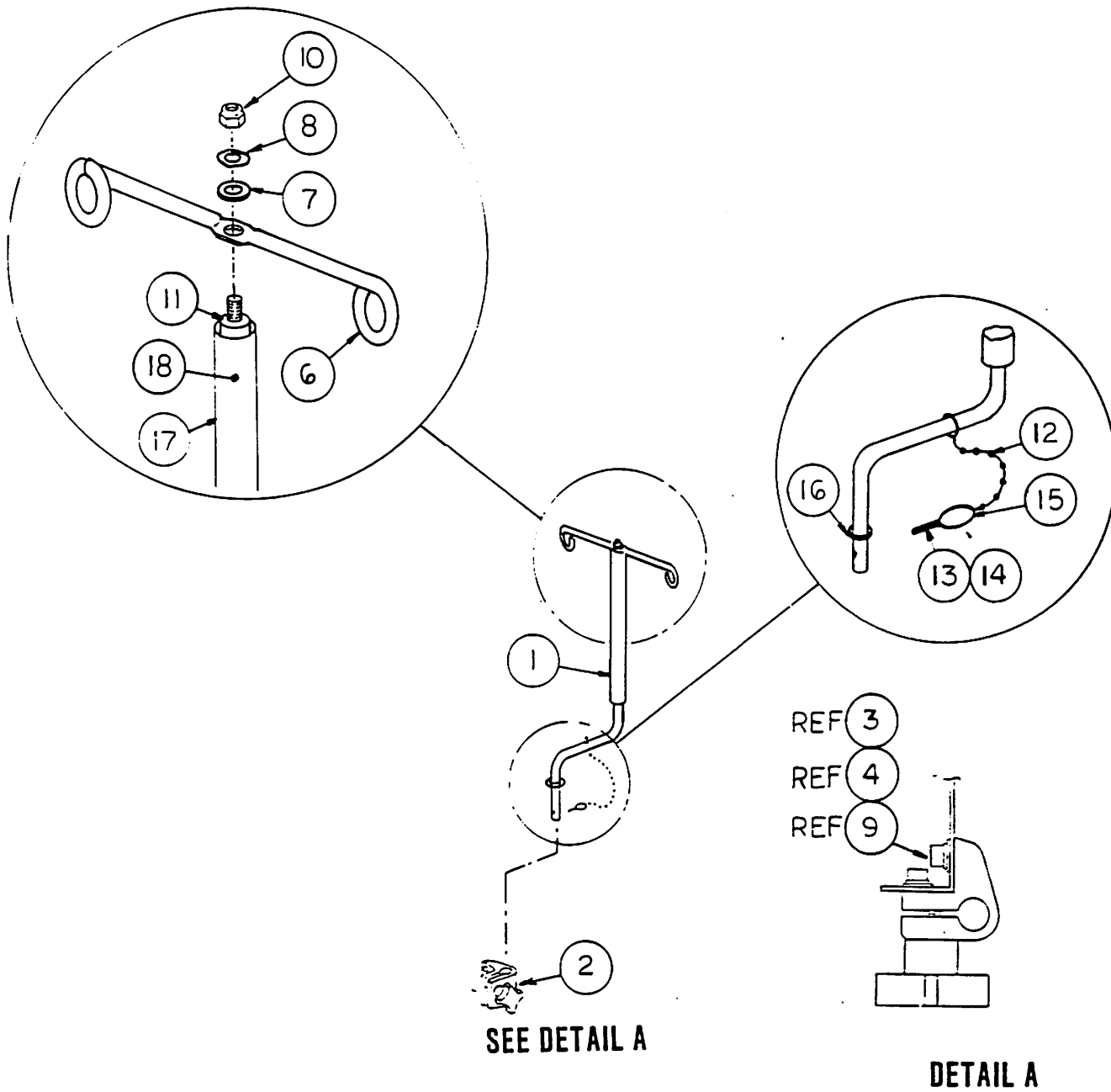


FIGURE 6.16 PARTS LOCATION DIAGRAM, I.V. POLE PACKAGE

**TABLE 6.16 I.V. POLE PACKAGE, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		I.V. POLE PACKAGE	78 166 71
		I.V. POLE PACKAGE (Includes Pivot Bracket)	78 166 72
1		I.V. Pole Assembly	78 166 76
2*		Kit, Pivot Bracket Assembly (Locking)	78 930 96
3		Scr, 10-24 x 3/8 LG, CP, SK, SS	99 047 53
4		Washer, #10 LK, SP, S CA	99 124 16
5		Not Used	
6		Cross Arm, I.V.	26 822 00
7		Washer, 1/4 FL, SS	99 125 24
8		Washer, SPR, Curved, .25 I.D. x .50 O.D. x .010	99 125 63
9		Washer, #10 FL SS	99 123 62
10		Nut, 1/4-20, ES, SS	99 109 27
11		I.V. Pole, Offset, Rod	78 166 00
12		Bead Chain, No. 6	26 663 05
13		Coupling, Offset, Bead Chain	26 662 05
14		Spacer, 0.171 I.D. x 1/4 O.D. x 3/8"	99 123 36
15		Ball Detent Pin with Ring	78 166 05
16		Retaining Ring, SS, 5100-50	99 182 65
17		Adapter, 1.00 Diameter (Includes Item 18)	78 930 91
18		Set Scr, 1/4-20 x 1/4 SE SK SS CP	99 054 15

* Includes items 2, 3, 4 and 5

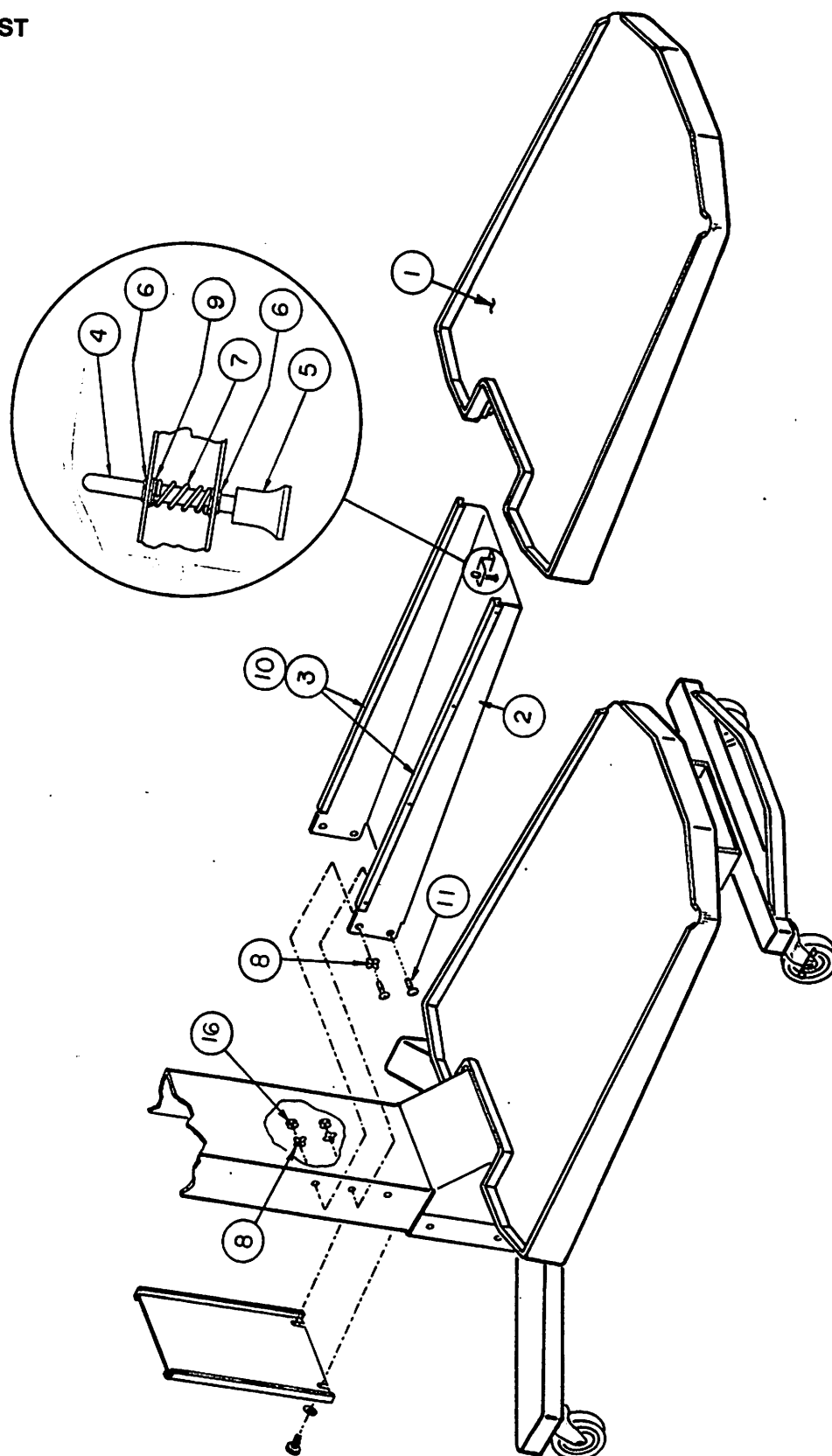


FIGURE 6.17 PARTS LOCATION DIAGRAM, CART SHELF PACKAGE

**TABLE 6.17 CART SHELF PACKAGE, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		CART SHELF PACKAGE	78 155 80
1		Shelf, Cart, Plastic	78 155 05
2		Channel, Support, Middle Shelf	78 155 36
3		Rail, Shelf, Slide Plastic	78 155 46
4		Pin, Latching, Cart Shelf	78 155 40
5		Knob, Plastic, 1/4-20 THD, BLK	78 155 43
6		Bearing, Split, .25 ID	78 155 65
7		Spring, Compression	20 016 03
8		Washer, LK, Dished, 1/4 S Z1	99 125 94
9		Ring, Retaining	99 181 40
10		Rivet, Pop, 1/8 Dia x .357 LG, AL	99 131 66
11		Screw, 1/4-20 x 5/8 TR, PH, SS	99 056 59
12		Not Used	
13		Not Used	
14		Not Used	
15		Not Used	
16		Nut, Hex, SS 1/4-20	99 109 00

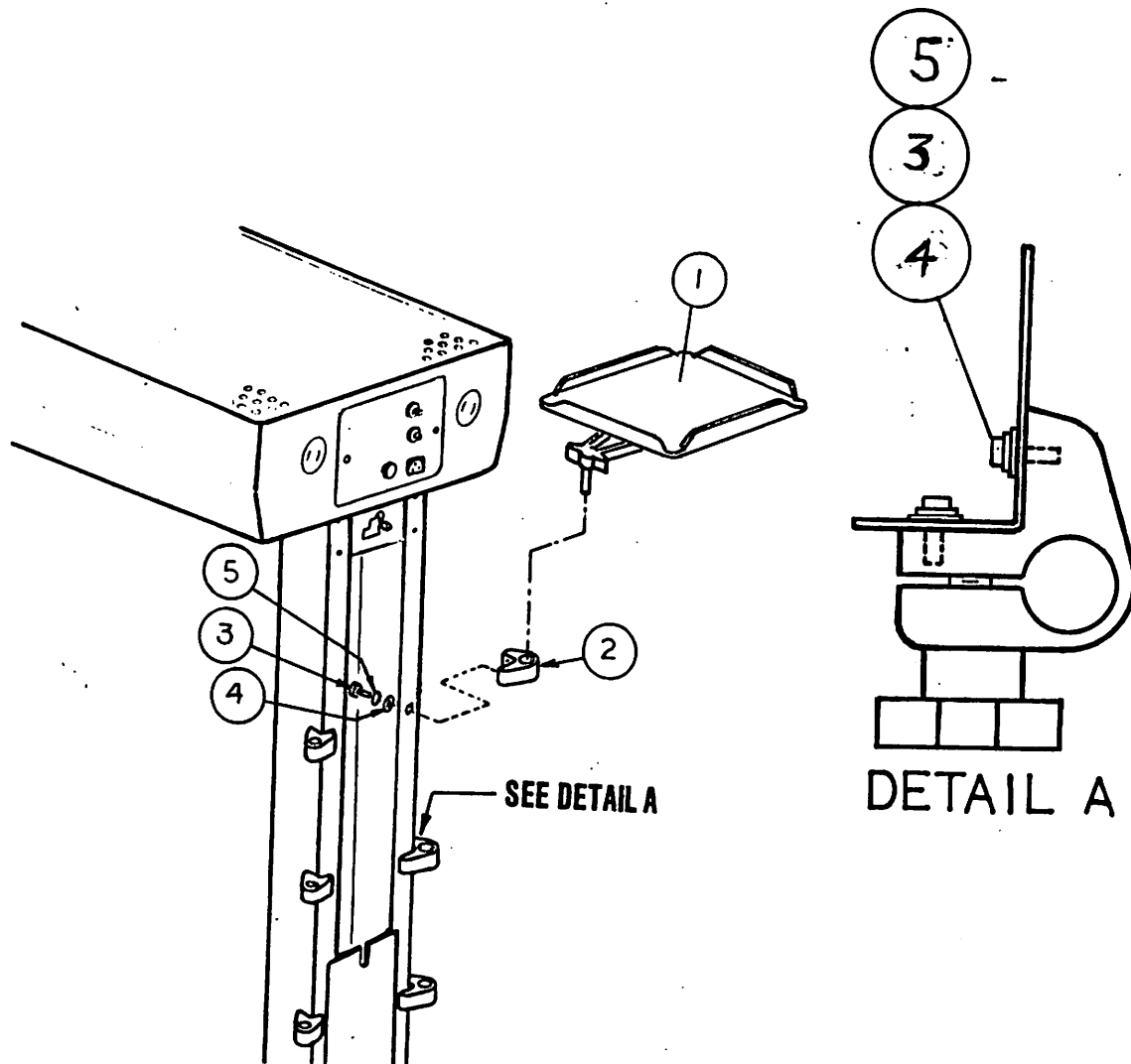


FIGURE 6.18 PARTS LOCATION DIAGRAM, MONITOR SHELF PACKAGE

**TABLE 6.18 MONITOR SHELF PACKAGE, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
—		MONITOR SHELF PACKAGE	78 165 70
1		Monitor Shelf Assembly	78 165 80
		(Refer to Table 6.19)	
2*		Kit, Pivot Bracket Assembly (Locking)	78 930 96
3		Screw, 10–24 x 3/8 CP SK SS	99 047 53
4		Washer, #10 FL SS	99 123 62
5		Washer, #10 LK SP S CA	99 124 16

* Includes items 2, 3, 4 and 5

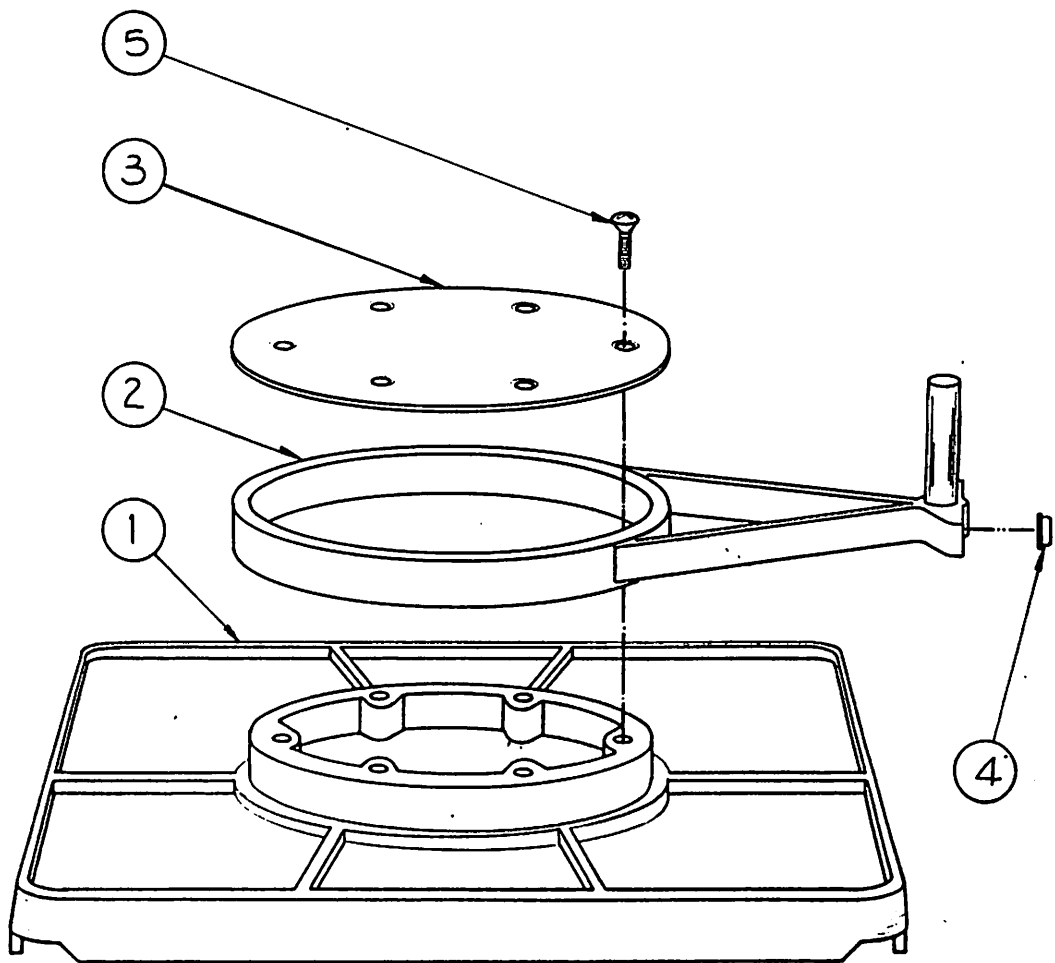


FIGURE 6.19 PARTS LOCATION DIAGRAM, MONITOR SHELF UNIT

**TABLE 6.19 MONITOR SHELF UNIT, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
—		MONITOR SHELF UNIT	78 165 80
1		Shelf, Monitor, Plastic	78 155 15
2		Arm, Shelf, Mounting	78 165 15
3		Disc, Retaining, Plastic	78 165 21
4		Bumper	78 102 65
5		Screw, #8-32 x 3/8 OV PH SS Nylock	99 031 48

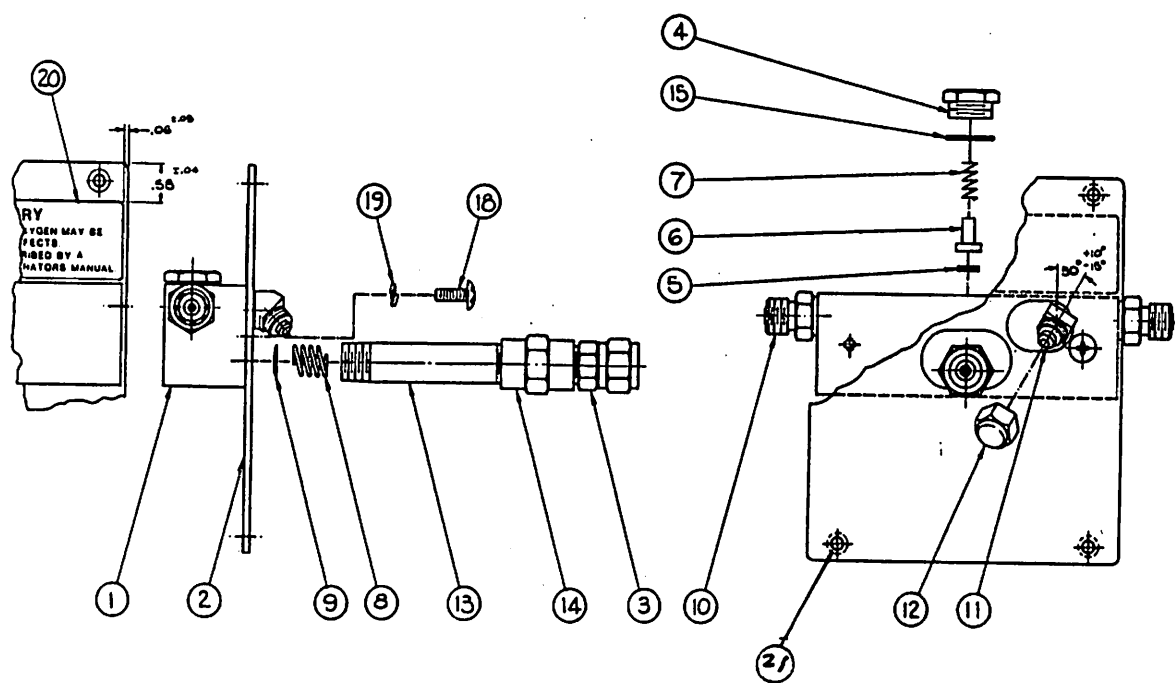


FIGURE 6.20 PARTS LOCATION DIAGRAM, OXYGEN DELIVERY PACKAGE (WALL OXYGEN ONLY)

**TABLE 6.20 OXYGEN DELIVERY PACKAGE (WALL OXYGEN ONLY), PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		OXYGEN DELIVERY PACKAGE:	
		English Labeling	78 442 85
		Spanish Labeling	78 442 86
		French Labeling	78 442 87
		German Labeling	78 442 88
1		Manifold, Oxygen Delivery	78 442 00
2		Panel, Manifold Mtg., Oxygen Delivery	78 442 05
3		Adapter, 1/4 NPT, Male to DISS, Oxygen Fem.	78 411 00
4		Cap, Check Valve	78 422 35
5		Disc, Relief Valve	78 422 45
6		Stem, Check Valve	78 422 50
7		Spring, Cprsn, .26 OD x .018W, .56 LG	78 422 55
8		Spring, CPRSN, .45 OD x .037W, .50 LG	78 423 35
9		Screen, Filter	78 423 40
10		Shut-Off, Diss, Oxygen, Male	78 435 31
11		Elbow, Male, 45°, 1/8 NPT, 1/4 Flare TBG	78 422 15
12		Cap, Nut, 1/4 TBG, 45° Flare	78 422 10
13		Nipple, 1/4 NPT	78 422 20
14		Coupling, Fem to Fem, 1/4 NPT	78 442 25
15		O-Ring, 9/16 x 3/4 x 3/32 VITON	99 161 05
16		Not Used	
17		Not Used	
18		Screw, 10-32 x 1/2 TR, PH SS	99 042 01
19		Washer, Lock, Split, #10 S CA	99 124 16
20		Label, Oxygen Delivery, English	78 442 40
		Label, Oxygen Delivery, Spanish	78 442 41
		Label, Oxygen Delivery, French	78 442 42
		Label, Oxygen Delivery, German	78 442 43
21*		Screw, 8-32 x 3/8", 0V, PH, SS, Nylock	99 031 48
22*		Label, Oxygen Inlet, English	78 442 30
		Label, Oxygen Inlet, Spanish	78 442 31
		Label, Oxygen Inlet, French	78 442 32
		Label, Oxygen Inlet, German	78 442 33

* Not shown

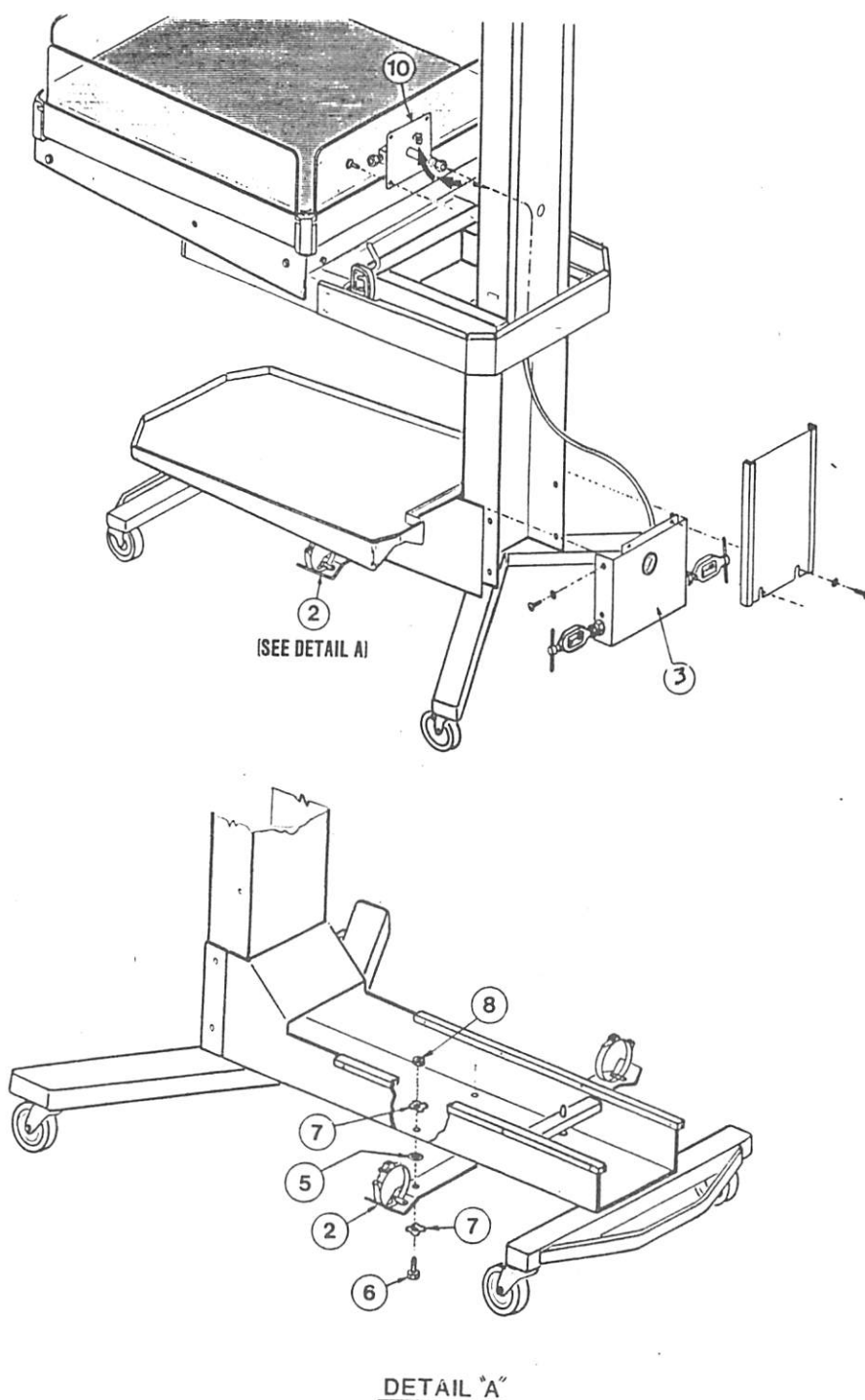


FIGURE 6.21 PARTS LOCATION DIAGRAM, OXYGEN DELIVERY SYSTEM WITH AUXILIARY TANK PROVISION PACKAGE (WALL AND AUXILIARY TANK OXYGEN)

**TABLE 6.21 OXYGEN DELIVERY SYSTEM WITH AUXILIARY TANK PROVISION
PACKAGE
(WALL AND AUXILIARY TANK OXYGEN), PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		OXYGEN DELIVERY SYSTEM WITH AUXILIARY TANK PROVISION PACKAGE (Includes Items 2 through 10)	
		English Labeling	78 441 70
		Spanish Labeling	78 441 71
		French Labeling	78 441 72
		German Labeling	78 441 73
-		Auxiliary Oxygen Supply Package	78 440 70
		(Includes Items 2 through 9)	
2		Tank Bracket Assembly (Refer to Table 6.22)	78 440 75
3		Auxiliary Oxygen Supply/Regulation Assy.	78 440 80
		(Refer to Table 6.23)	
4		Not Used	
5		Washer, .25 ID x 1.50 OD x .19 THK	78 440 35
6		Screw, 1/4-20 x 3/4 CP HX SS	99 056 96
7		Washer, Lock, Dished Tooth 1/4	99 125 94
8		Nut, Hex, 1/4-20, SS	99 109 00
9		Wrench Chain Assy (Not Shown)	78 410 76
10		Oxygen Delivery Package: (Refer to Table 6.20)	
		English Labeling	78 442 85
		Spanish Labeling	78 442 86
		French Labeling	78 442 87
		German Labeling	78 442 88

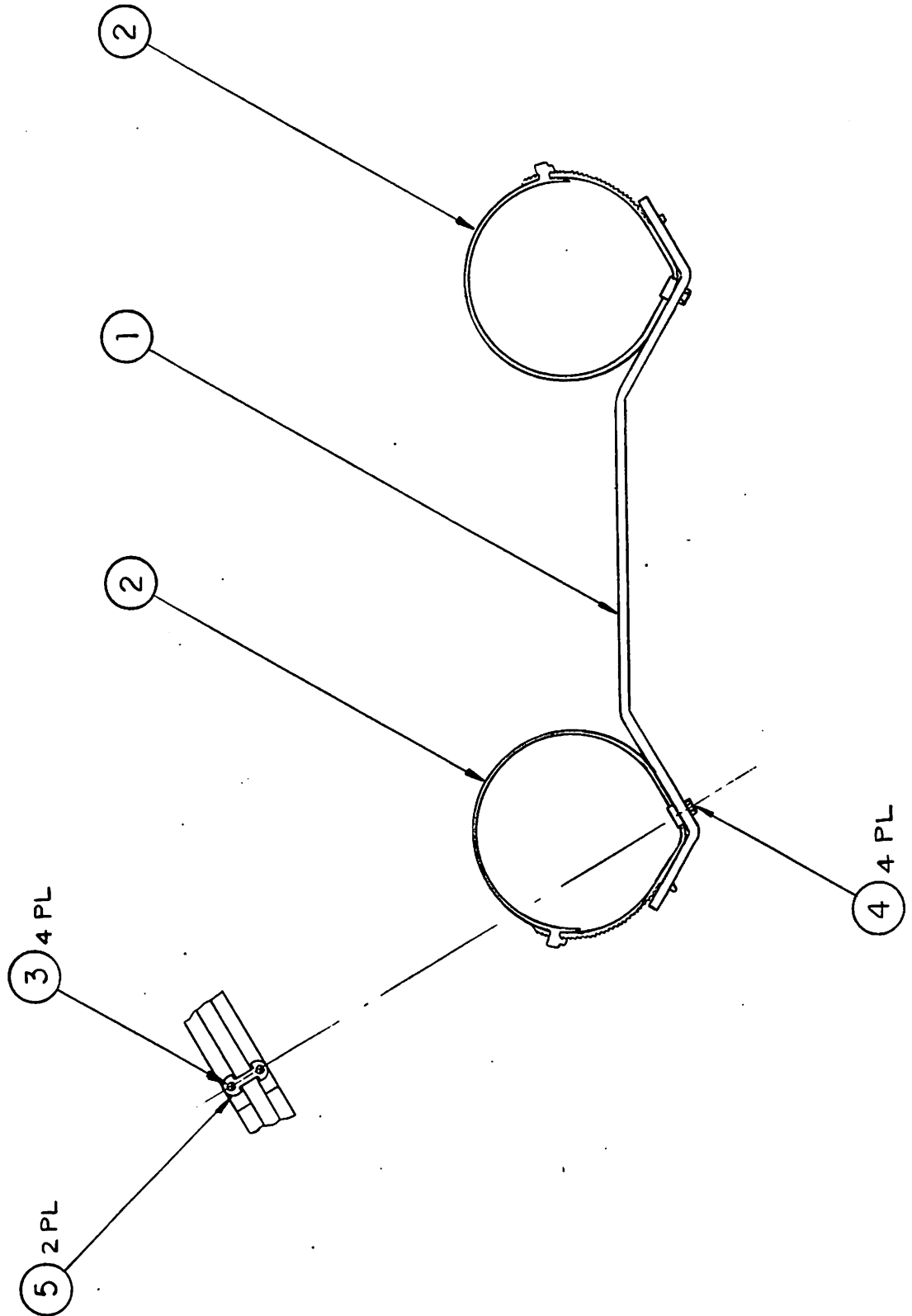


FIGURE 6.22 PARTS LOCATION DIAGRAM, TANK BRACKET ASSEMBLY

**TABLE 6.22 TANK BRACKET ASSEMBLY, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
—		TANK BRACKET ASSEMBLY	78 440 75
1		Bracket, Tank, Mtg.	78 440 05
2		Clamp, Adjustable, Plastic	78 440 10
3		Screw, 8-32 x 5/8, FL PH SS	99 032 58
4		Nut, 8-32, S, Z1, Flexlock	99 106 03
5		Fastener, Clamp, Plastic	78 440 40

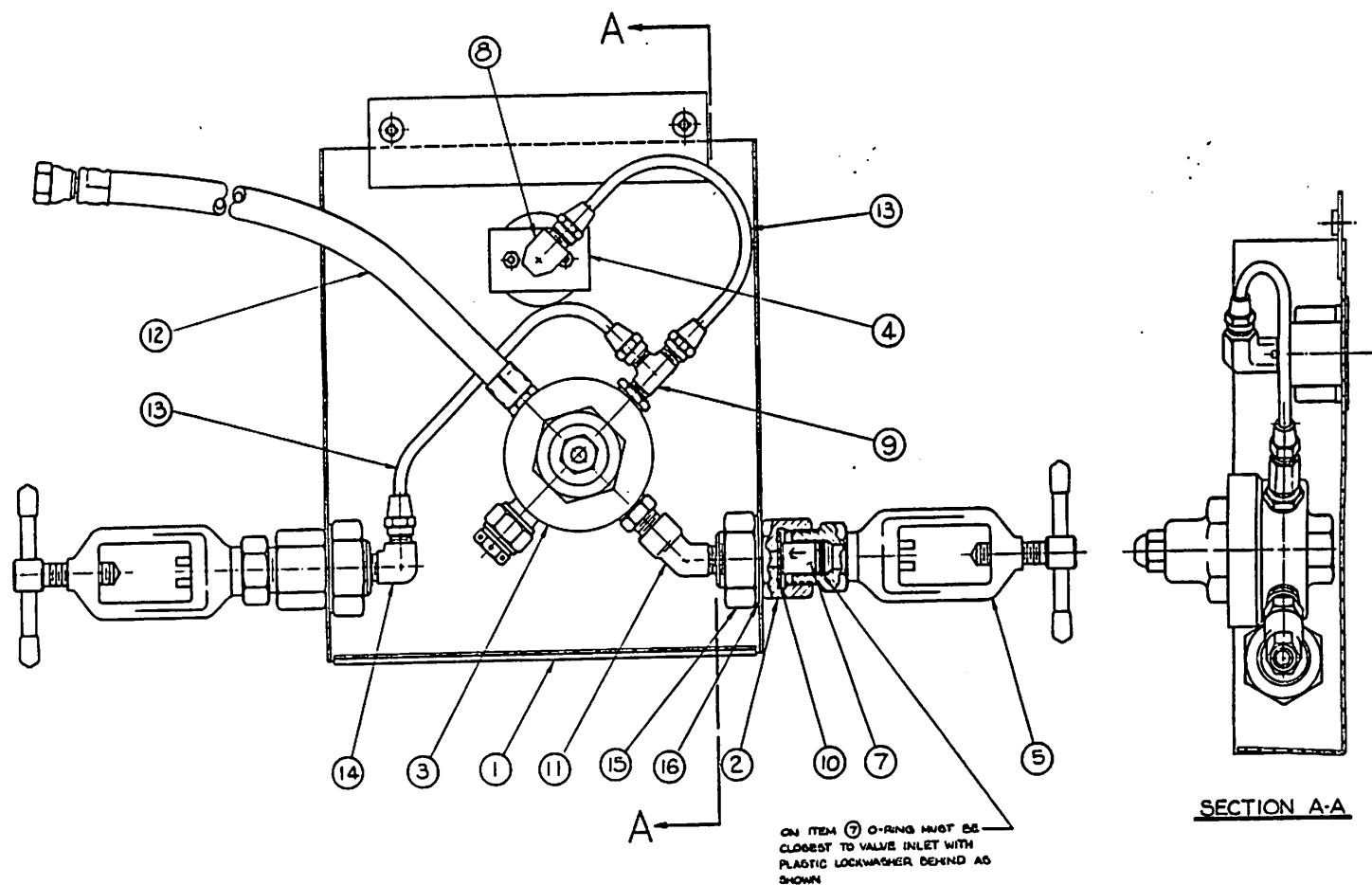


**FIGURE 6.23 PARTS LOCATION DIAGRAM, AUXILIARY OXYGEN SUPPLY
REGULATION ASSEMBLY**

**TABLE 6.23 AUXILIARY OXYGEN SUPPLY REGULATION ASSEMBLY, PARTS
LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		AUXILIARY OXYGEN SUPPLY REGULATION ASSEMBLY	78 440 80
1		Channel, Mtg, Oxygen Supply	78 440 00
2		Adapter, Yoke	78 440 15
3		Regulator, Fixed, O2 Clean	78 440 20
4		Gauge, Oxygen Pressure	78 422 00
5		Yoke, Oxygen, Modified	78 422 07
6		Not Used	
7		Check Valve	78 422 41
8		Elbow, 90°, 3/16 TBG x 1/8 NPT, FEM	78 423 15
9		Tee, Male, 3/16, TBG (FLARE) x 1/8 NPT (M)	78 423 25
10		Washer, Regulator	78 423 30
11		Elbow, Street, 45° 1/8 NPT	78 440 25
12		Hose Assembly	78 440 95
13		Tubing Assembly	78 440 85
14		Elbow, 90°, 3/16 TBG, 1/8 NPT, Male	78 423 10
15		Nut, 7/8-14 HX JM S Z1	99 114 50
16		Wshr, LK, INT, 7/8 S CA	99 129 85

**IICS
PARTS LIST**

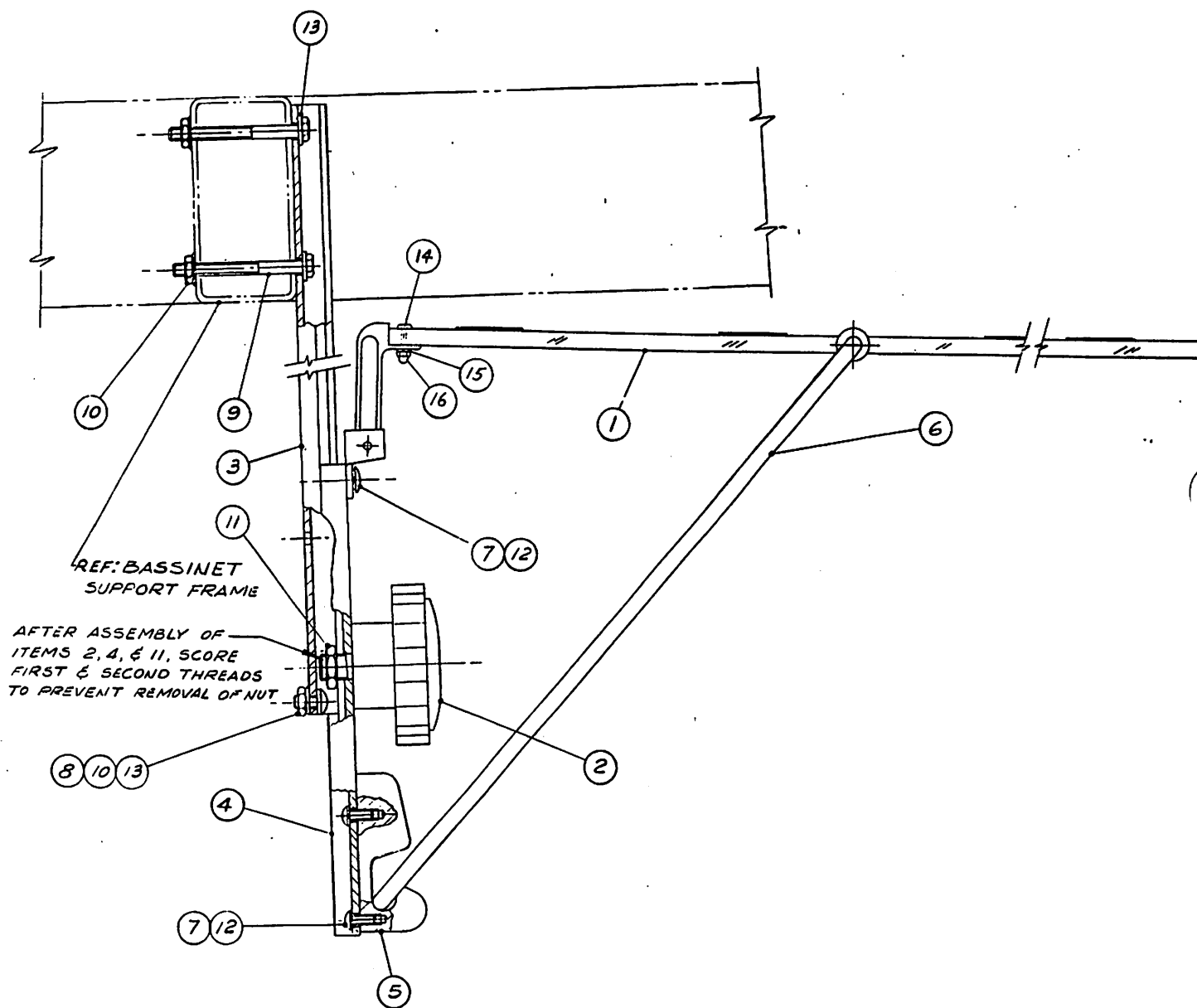


**FIGURE 6.24 PARTS LOCATION DIAGRAM, DIRECT MAGNIFICATION RADIOGRAPHY (DMR)
CASSETTE HOLDER PACKAGE**

**TABLE 6.24 DIRECT MAGNIFICATION RADIOGRAPHY (DMR)
CASSETTE HOLDER PACKAGE, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		DIRECT MAGNIFICATION RADIOGRAPHY (DMR) CASSETTE HOLDER PACKAGE	78 167 70
1		Shelf Assy, X-Ray Cassette (Table 6.25)	78 167 80
2		Knob Assy	78 167 85
3		Rail, Slide, Machining	78 167 05
4		Channel, Slide, Machining	78 167 15
5		Block, Latch, Machining	78 167 20
6		Brace, X-Ray Shelf	78 167 45
7		Screw 8-32 x 1/2 TR PH SS	99 031 99
8		Screw 10-32 x 3/8 FL PH SS	99 041 33
9		Screw 10-32 x 2 HEX SS	99 045 24
10		Nut, 10-32 HEX "KEPS" S CA	99 107 36
11		Nut, 3/8-24 HEX, JAM SS	99 111 68
12		Wshr, #8 LK, SP SS	99 122 95
13		Wshr, #10 FL SS	99 123 62
14		Screw, 6-32 x 1/2 TR PH SS	99 023 92
15		Wshr, No. 6 LK SHI SH	99 122 19
16		Nut, 6-32 AC AL	99 105 20

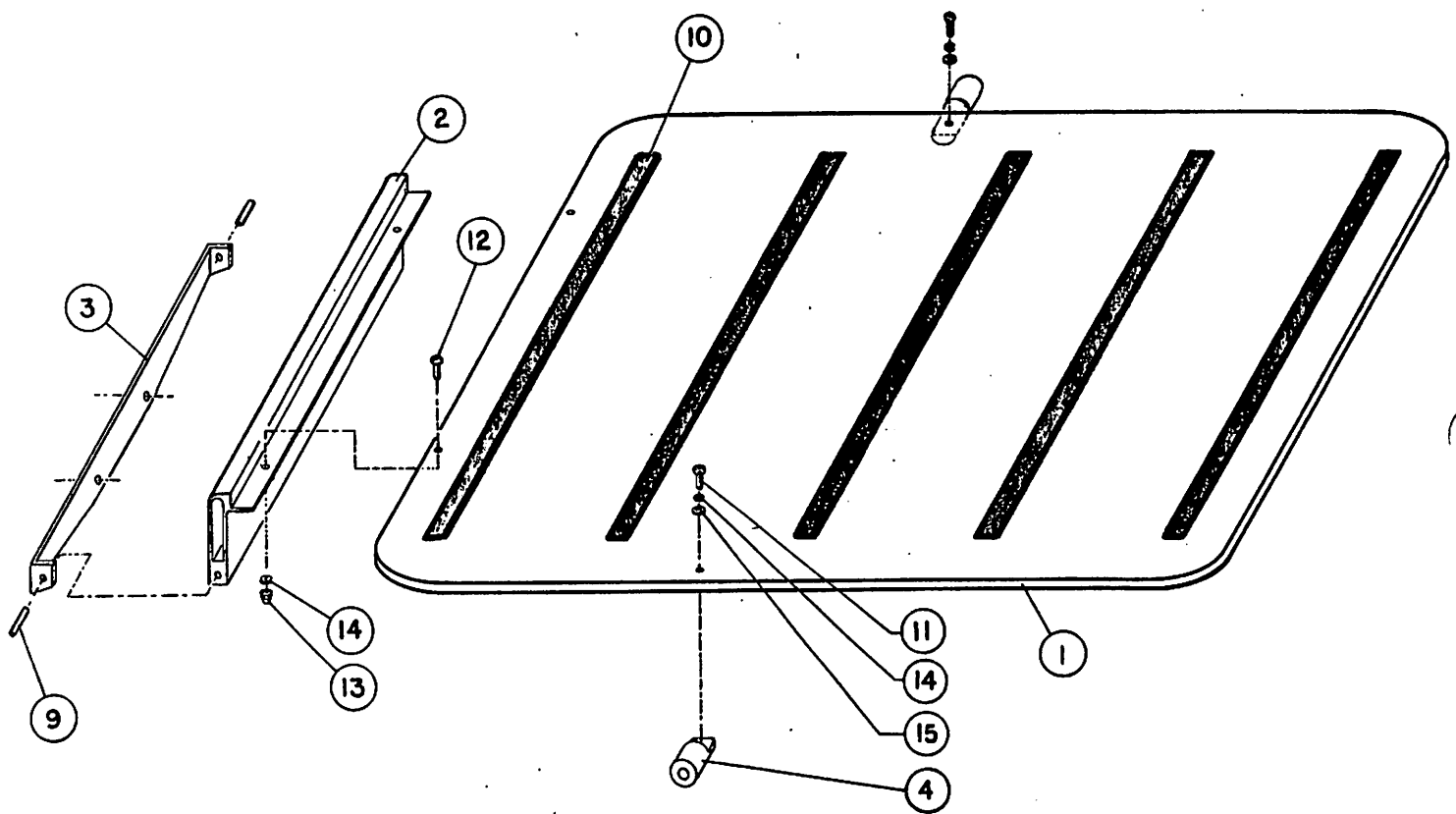


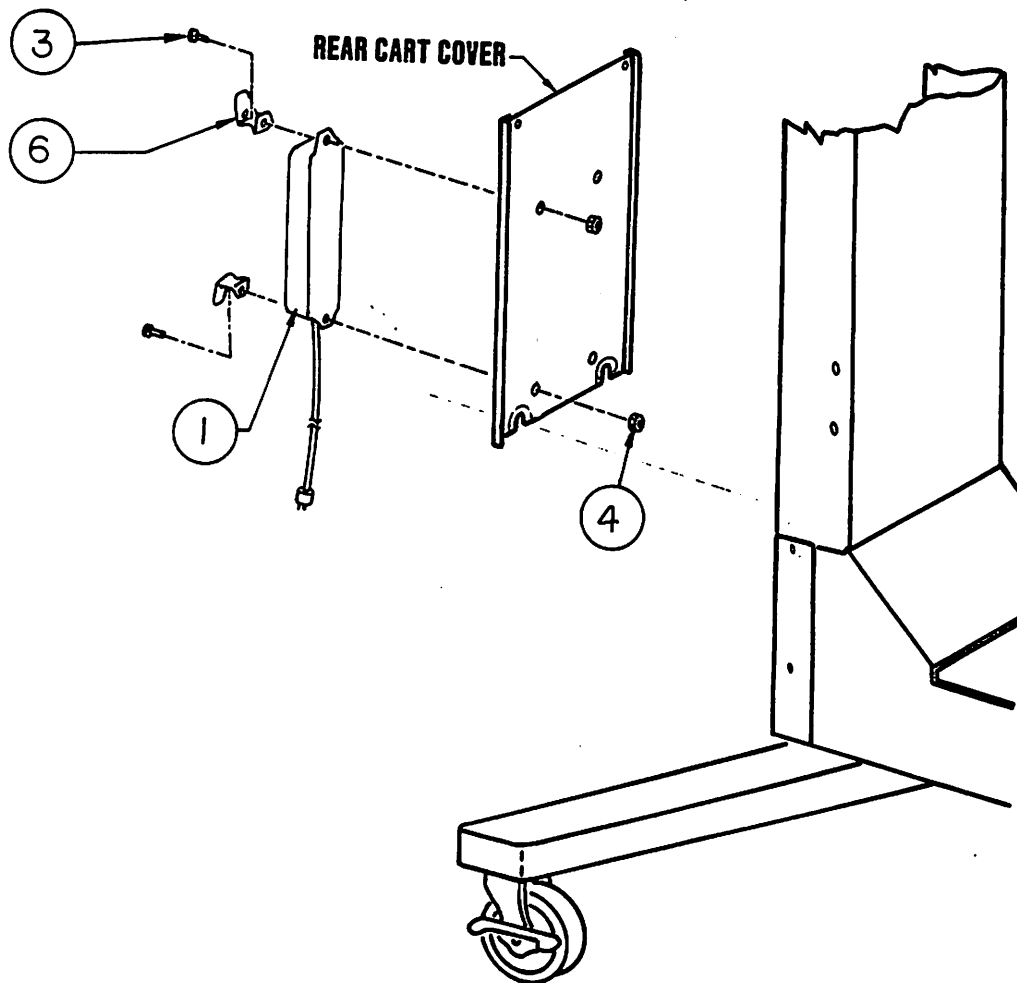
FIGURE 6.25 PARTS LOCATION DIAGRAM, SHELF ASSEMBLY, X-RAY CASSETTE HOLDER

**TABLE 6.25 SHELF ASSEMBLY, X-RAY CASSETTE HOLDER, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		SHELF ASSEMBLY, X-RAY CASSETTE HOLDER ..	78 167 80
1		Shelf, Acrylic, Clear, X-Ray Cassette	78 167 25
2		Bracket, Shelf, Machining	78 167 30
3		Bracket, Pivot	78 167 35
4		Bar, Pivot	78 167 40
5		Not Used	
6		Not Used	
7		Not Used	
8		Not Used	
9		Pin, .125D x .63 LG Groove, Type 4, ...	99 143 73
		St. Zinc PL	
10		Foot Grip	53 300 22
11		Screw, 6-32 x 7/16 RD PH SS	99 023 56
12		Screw, 6-32 x 1/2 TR PH SS	99 023 92
13		Nut, 6-32 AC AL	99 105 20
14		Washer, No. 6,, LK, SHI S4	99 122 19
15		Washer, No. 6 FL SS	99 122 03

NOTE: MOUNTS ON THE SIDES OF THE MOUNTING
BRACKET OF WALL MOUNTED INFANT INTENSIVE CARE
SYSTEM



NOTE: MOUNTS ON THE SIDES OF THE MOUNTING BRACKET
OF WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

FIGURE 6.26 PARTS LOCATION DIAGRAM, A.C. RECEPTACLE BOX ASSEMBLY

**TABLE 6.26 A.C. RECEPTACLE BOX ASSEMBLY, PARTS LIST
(ACCESSORY)**

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		AC RECEPTACLE BOX ASSEMBLY	78 446 70
1		Power Outlet Strip, 6 Recept, Modified	17 732 56
2		Not Used	
3		Screw, 8-32 x 1/2 TR PH SS	99 031 99
4		Nut, Hex, 8-32 Flexlock, Thin, S, Z1	99 106 03
5		Not Used	
6		Bracket, Cord Retaining	78 446 05

IICS PARTS LIST

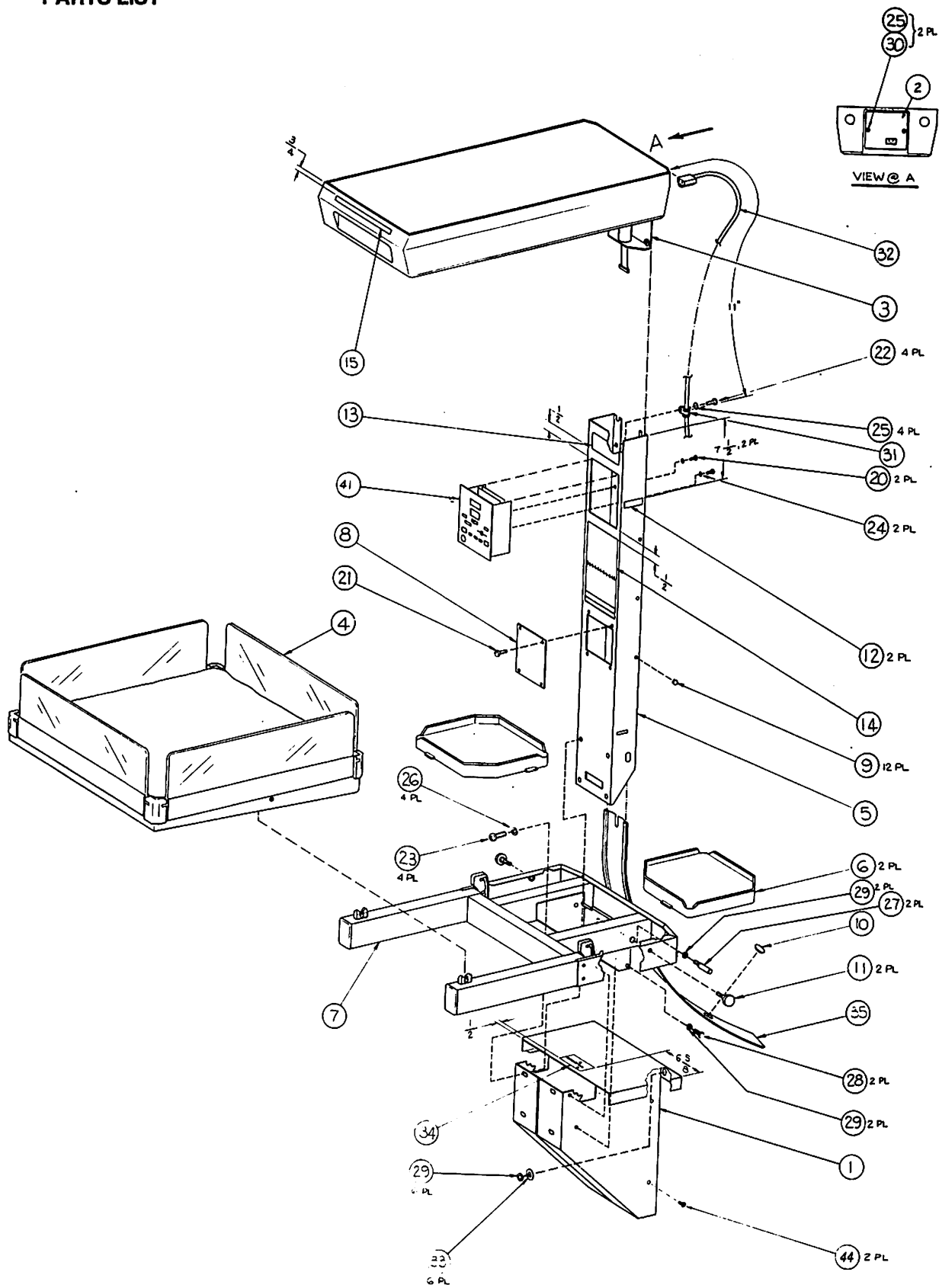


FIGURE 6.27 PARTS LOCATION DIAGRAM, WALL MOUNTED INFANT INTENSIVE CARE SYSTEM

TABLE 6.27 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		WALL MOUNTED INFANT INTENSIVE CARE SYSTEM:	
		English Labeling, 110/120V	78 280 70
		Spanish Labeling, 110/120V	78 280 71
		French Labeling, 110/120V	78 280 72
		English Labeling, 220/240V	78 280 80
		Spanish Labeling, 220/240V	78 280 81
		French Labeling, 220/240V	78 280 82
		German Labeling, 220/240V	78 280 83
		English Labeling, 100V	78 280 90
1		Bracket, Wall Mounting	78 280 00
2		POWER MODULE ASSEMBLY (Series 01)	
		(Refer to Tables 6.8 and 6.9A)	
		English Labeling 110/120V	78 306 70
		Spanish Labeling 110/120V	78 306 71
		French Labeling 110/120V	78 306 72
		English Labeling 220/240V	78 306 80
		Spanish Labeling 220/240V	78 306 81
		French Labeling 220/240V	78 306 82
		German Labeling 220/240V	78 306 83
		English Labeling 100V	78 306 90
3		WARMER MODULE ASSEMBLY:	
		(Refer to Table 6.10)	
		English Labeling, 110/120V	78 265 70
		Spanish Labeling, 110/120V	78 265 71
		French Labeling, 110/120V	78 265 72
		English Labeling, 220/240V	78 265 80
		Spanish Labeling, 220/240V	78 265 81
		French Labeling, 220/240V	78 265 82
		German Labeling, 220/240V	78 265 83
		English Labeling, 100V	78 265 90

TABLE 6.27 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
4		BASSINET ASSEMBLY: (Refer to Table 6.13)	78 162 70
5		Post, Upper	
		English Labeling	78 940 16
		Spanish Labeling	78 940 17
		French Labeling	78 940 18
		German Labeling	78 940 19
6		Tray, Instrument	78 155 10
7		SUPPORT FRAME ASSEMBLY, BASSINET: (Refer to Table 6.28)	78 280 98
8		Plate, Cover, Upper Post	78 161 10
9		Plug Button, 1/4 Mtg. Hole, Plastic	78 161 00
10		Plug, Button, 7/8 Dia Mtg. Hole, Plastic	78 161 20
11		Knob, Knurled, 1/4-20 Thd Shaft	17 061 10
12		Label, Shelf Load Limit, Eng	78 000 10
13		Label, Caution, Heating Hazard, Eng	78 000 15
14		Placard, Precautions/Instructions	78 000 45
15		Not Used	
16		Not Used	
17		Not Used	
18		Probe, Temp, Skin	68 209 70
19		Cover, Probe, Skin Temp (Box of 100), ... (Not Shown)	26 901 81
20		Screw, 6-32 x 3/8, TR, PH, SS	99 023 31
21		Screw, 8-32 x 5/16, RD, SL, NYL	99 031 07
22		Screw, 10-32 x 5/8, TR, PH, SS	99 042 58
23		Screw, 1/4 - 20 x 1/2, RD, PH, SS	99 055 81
24		Washer, #6, LK, SHI, SS	99 122 19
25		Washer, LK, INT, #10, SS	99 123 92
26		Washer, LK, SP, 1/4, SS	99 125 53

TABLE 6.27 WALL MOUNTED INFANT INTENSIVE CARE SYSTEM, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
27		Screw, 5/16 – 18, HEX Shoulder	78 155 38
28		Screw, 5/16 – 18 x 5/8 HEX STL CA	99 064 30
29		Washer, LK, SP, 5/16, S Z1	99 126 32
30		Screw, 10–32 x 1/2, TR, PH, SS	99 042 01
31		Clamp, Cable, .31 I.D.	17 732 42
32		Cable Assembly, AC Power Cord, Domestic	17 AZ 100
		Cable Assembly, AC Power Cord, Export	17 AZ 200
33		Washer, Flat, .344 I.D. x .75 O.D. x .05 THK, SS	99 126 10
34		Not Used	
35		Strip, Trim, Plastic, Upper Post	78 161 16
36		Not Used	
37		Not Used	
38		Not Used	
39		Not Used	
40		Not Used	
41		CONTROLLER ASSEMBLY (Refer to Table 6.3)	
		English Labeling	78 305 70
		Spanish Labeling	78 305 71
		French Labeling	78 305 72
		German Labeling	78 305 73
42		Not Used	
43		Label, Temperature Conversion (Not shown. To be installed in a location selected by user.)	68 111 35
44		Screw, No. 8 x 1/2 F TR PH SS	99 088 91

NOTES:

1. NUTS ③ AND SPACERS ④ MUST BE INSERTED INTO TILT BRACKET ② SO THAT THEY ARE OPPOSITE MATING SCREWS ⑥ ENTERING THRU INSTRUMENT TRAY SUPPORT FRAME ①.
2. BEVELED SIDES OF PIVOT BLOCKS ⑤ MUST FACE EACH OTHER.

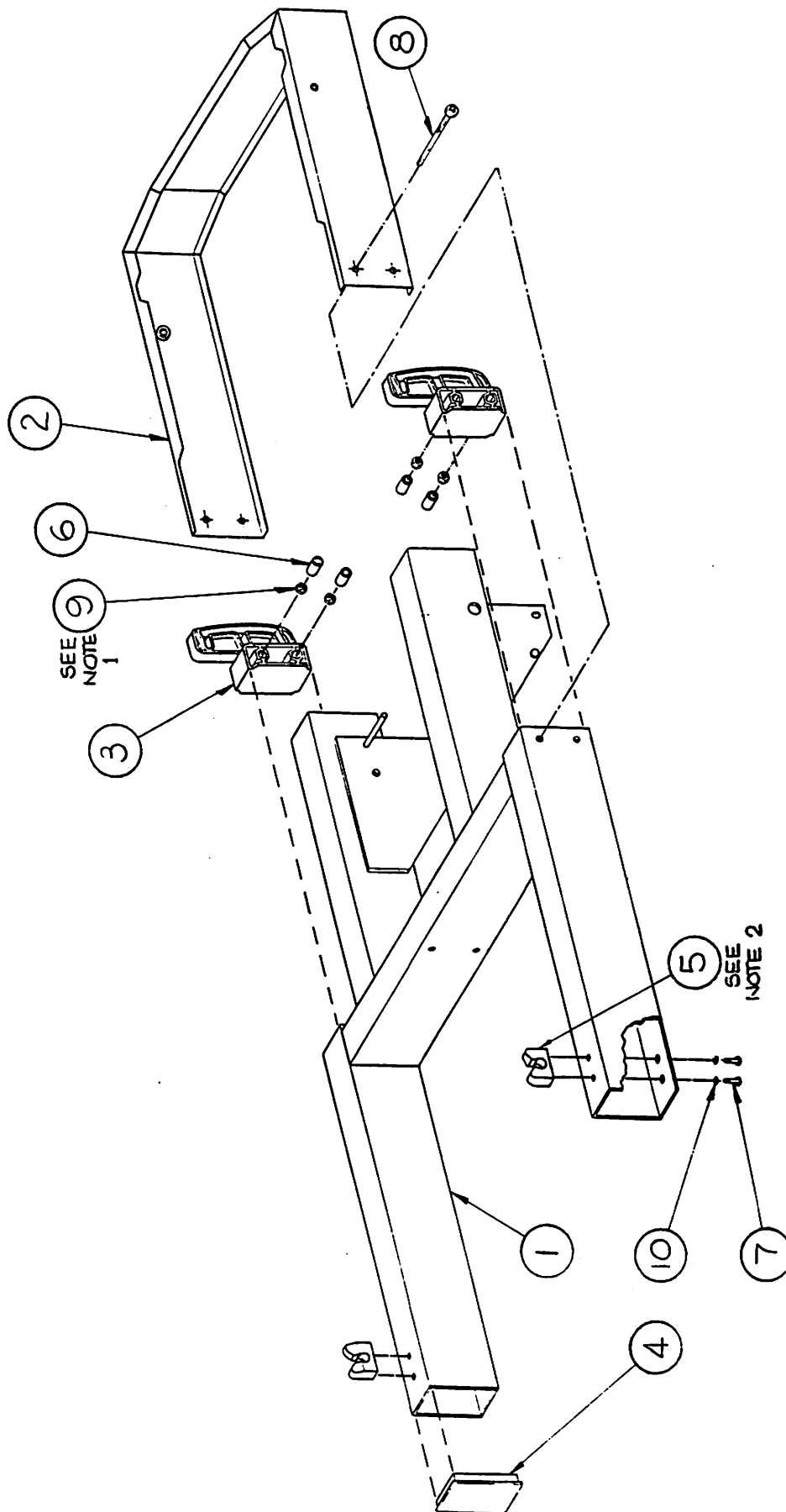


FIGURE 6.28 PARTS LOCATION DIAGRAM, BASSINET SUPPORT FRAME ASSEMBLY

TABLE 6.28 BASSINET SUPPORT FRAME ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
—		BASSINET SUPPORT FRAME ASSEMBLY	78 280 98
1		Frame, Support, Bassinet	78 160 00
2		Frame, Support, Instrument Tray	78 160 10
3		Bracket, Tilt, Adjusting	78 160 05
4		Cap, Tubing, Plastic, 1 1/2 x 3	78 610 64
5		Block, Pivot	78 160 20
6		Spacer, Nylon	99 125 65
7		Screw, 8 – 32 x 1 1/2, TR, PH, SS	99 031 99
8		Screw, 10 – 32 x 1 1/4, TR, PH, SS	99 044 06
9		Nut, 10 – 32, HEX, FLEXLOCK, S, Z1	99 107 38
10		Washer, LOCK, SP, #8, SS	99 122 95

**IICS
PARTS LIST**

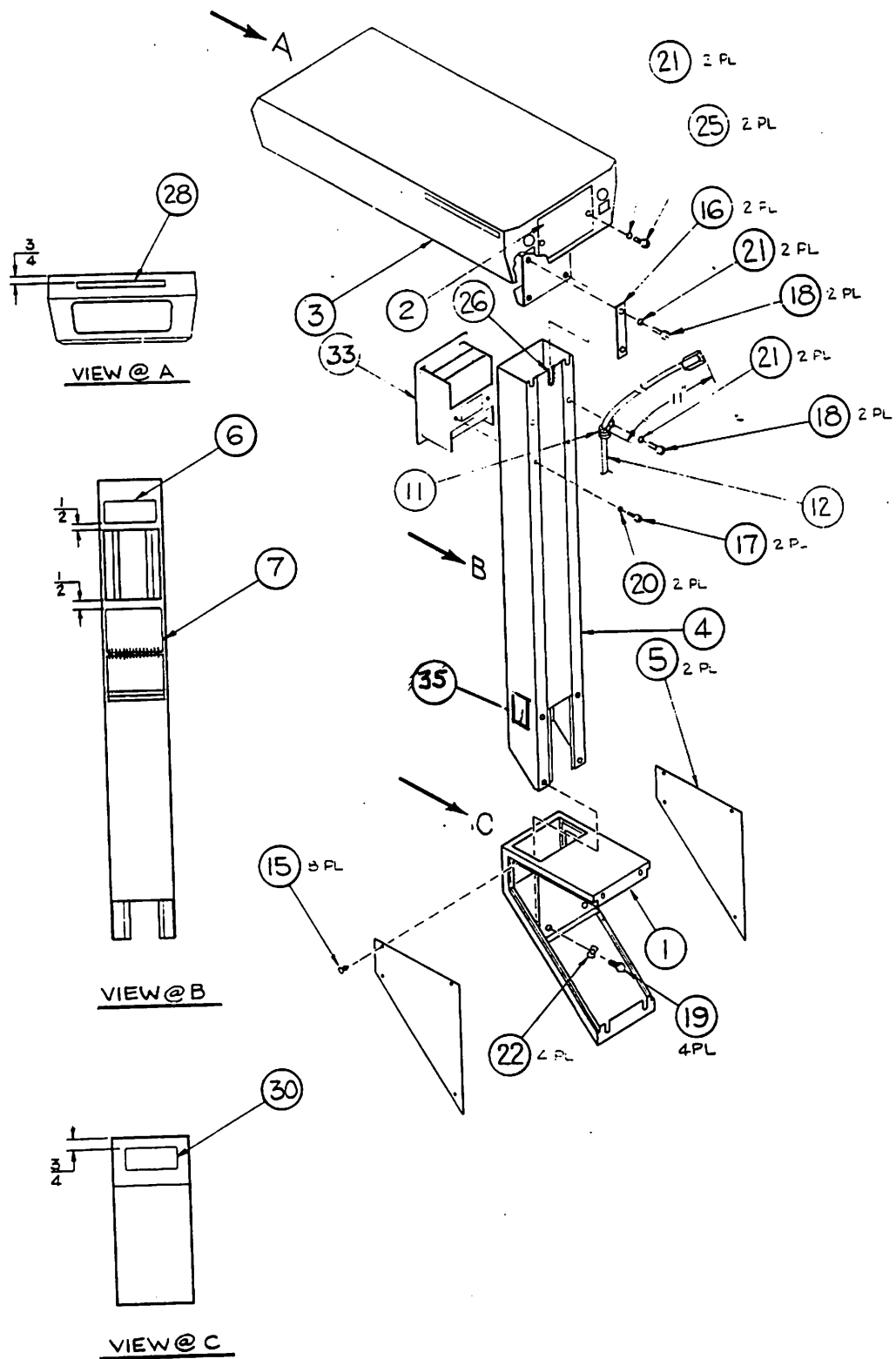


FIGURE 6.29 PARTS LOCATION DIAGRAM, WALL MOUNTED INFANT WARMER

TABLE 6.29 WALL MOUNTED INFANT WARMER, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		WALL MOUNTED INFANT WARMER:	
		English Labeling, 110/120V	78 275 70
		Spanish Labeling, 110/120V	78 275 71
		French Labeling, 110/120V	78 275 72
		English Labeling, 220/240V	78 275 80
		Spanish Labeling, 220/240V	78 275 81
		French Labeling, 220/240V	78 275 82
		German Labeling, 220/240V	78 275 83
		English Labeling, 100V	78 275 90
1		Bracket Wall Mounting	78 275 00
2		POWER MODULE ASSEMBLY (SERIES 01)	
		(Refer to Tables 6.8 and 6.9A)	
		English Labeling 110/120V	78 306 70
		Spanish Labeling 110/120V	78 306 71
		French Labeling 110/120V	78 306 72
		English Labeling 220/240V	78 306 80
		Spanish Labeling 220/240V	78 306 81
		French Labeling 220/240V	78 306 82
		German Labeling 220/240V	78 306 83
		English Labeling 100V	78 306 90
3		WARMER MODULE ASSEMBLY:	
		(Refer to Table 6.10)	
		English Labeling, 110/120V	78 265 70
		Spanish Labeling, 110/120V	78 265 71
		French Labeling, 110/120V	78 265 72
		English Labeling, 220/240V	78 265 80
		Spanish Labeling, 220/240V	78 265 81
		French Labeling, 220/240V	78 265 82
		German Labeling, 220/240V	78 265 83
		English Labeling, 100V	78 265 90

TABLE 6.29 WALL MOUNTED INFANT WARMER, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
4		POST, WARMER MOUNTING:	
		English Labeling	78 940 24
		Spanish Labeling	78 940 25
		French Labeling	78 940 26
		German Labeling	78 940 27
5		Panel, Finishing, Wall Mount	78 275 05
6		Not Used	
7		Placard, Precautions/Instructions	78 000 45
8		Not Used	
9		Not Used	
10		Not Used	
11		Clamp, Cable, .31 I.D.	17 732 42
12		Cable Assembly, AC Power Cord, Domestic	17 AZ 100
		Cable Assembly, AC Power Cord, Export	17 AZ 200
13		Probe, Temp, Skin	68 209 70
14		Cover, Probe, Skin Temp (Box of 100) (Not Shown)	26 901 81
15		Plug, Panel Fastening	78 275 10
16		Strip, Aluminum, .75 x 3.56 x .08 THK	78 275 15
17		Screw, 6 – 32 x 3/8, TR, PH, SS	99 023 31
18		Not Used	
19		Screw, 1/4 – 20 x 1/2, HEX, S, CA	99 055 85
20		Washer, #6, LK, SHI, SS	99 122 19
21		Washer, LK, INT, #10, SS	99 123 92
22		Washer, LK, Dished Tooth, 1/4	99 125 94
23		Washer, FL, .344 I.D. x .75 O.D. x .050 THK, SS	99 126 10

TABLE 6.29 WALL MOUNTED INFANT WARMER, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
24		Not Used	
25		Screw, 10 – 32 x 1/2, TR, PH, SS	99 042 01
26		Grommet, Continuous, 1/8 wide x .036 PNL x 2.38 LG	78 275 20
27		Not Used	
28		Not Used	
29		Not Used	
30		Not Used	
31		Not Used	
32		Not Used	
33		CONTROLLER ASSEMBLY (Refer to Table 6.3)	
		English Labeling	78 305 70
		Spanish Labeling	78 305 71
		French Labeling	78 305 72
		German Labeling	78 305 73
34		Label, Temperature Conversion (Not shown. To be installed in a location selected by user.)	68 111 35
35		Label Mattress Height	78 270 35

**IICS
PARTS LIST**

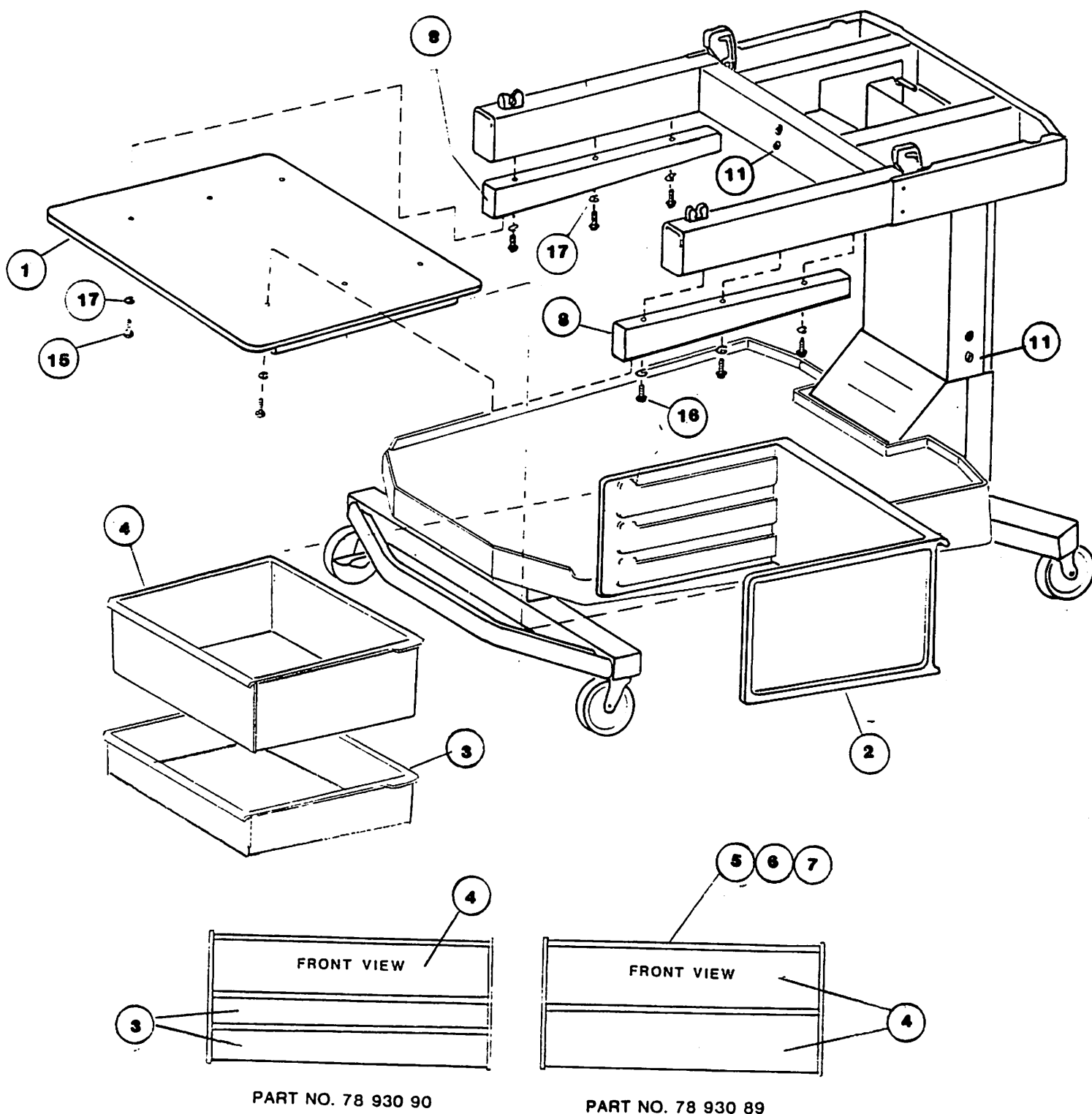


FIGURE 6.30 PARTS LOCATION DIAGRAM, DRAWER MODULE KIT

TABLE 6.30 DRAWER MODULE KIT, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		DRAWER MODULE KIT (Two "B" Size Drawers)	78 930 89
-		DRAWER MODULE KIT (One "B" Size Drawer;	78 930 90
		Two "A" Size Drawers)	
1		Counter Top	78 163 01
2		"C" Frame	78 163 06
3		"A" Size Drawer	78 163 10
4		"B" Size Drawer	78 163 15
5		Subcontainer, A-1	78 163 20
		(2-3/16" x 4-9/16" x 4-9/16")	
6		Subcontainer, A-2	78 163 25
		(2-3/16" x 9-3/16" x 4-9/16")	
7		Subcontainer, A-3	78 163 30
		(2-3/16 x 13-13/16 x 4-9/16")	
8		Adapter, Drawer to Cart	78 163 35
9		Not Used	
10		Not Used	
11		Plug Button, 1/4 Diameter	78 161 00
12		Not Used	
13		Not Used	
14		Not Used	
15		Screw, 8-32 x 1", TR, PH, SS	99 033 47
16		Screw, No. 8 x 5/8, F, PN, PH, S4	99 089 24
17		Washer, LK, SP, No. 8, SS	99 122 95

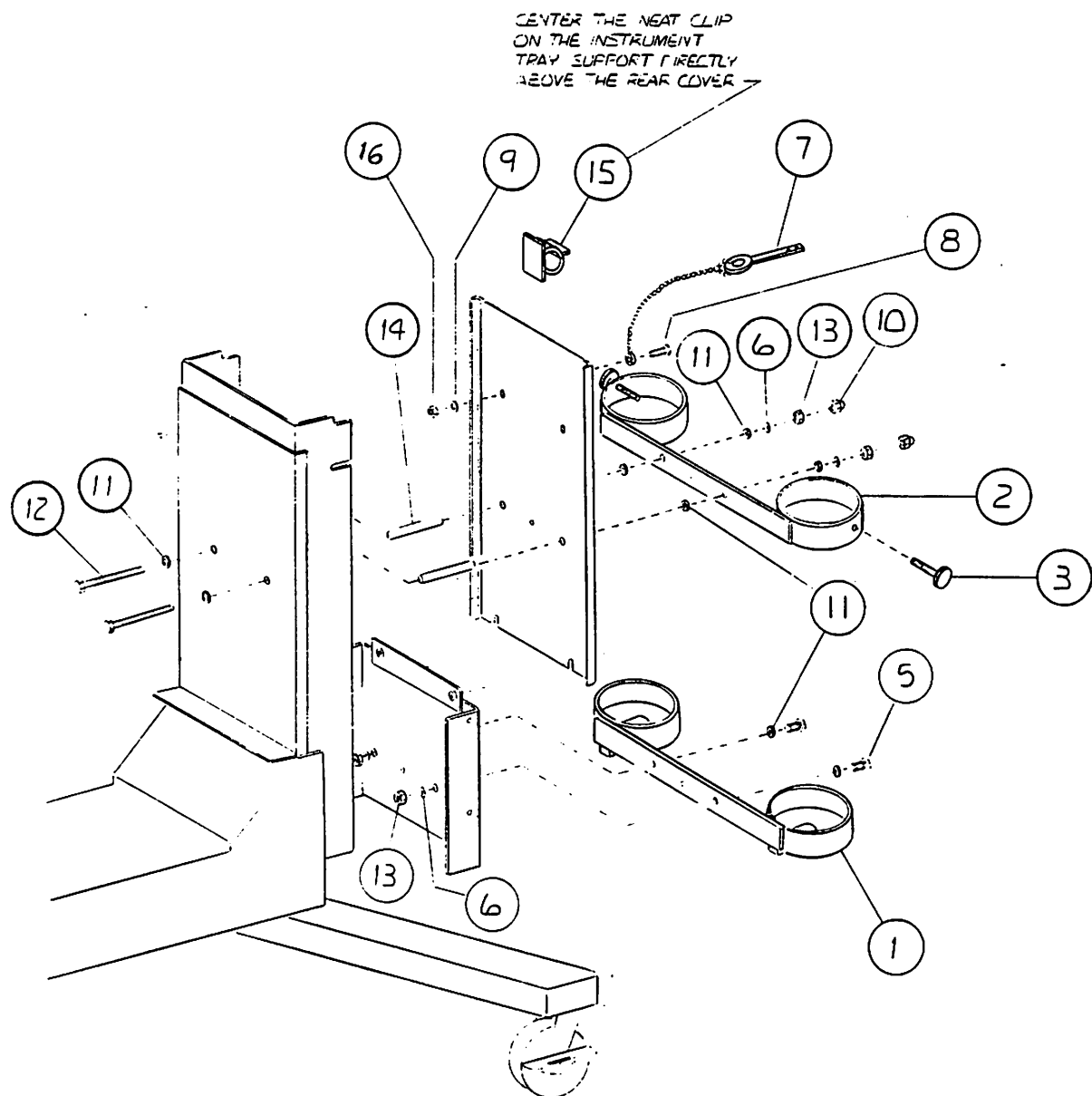


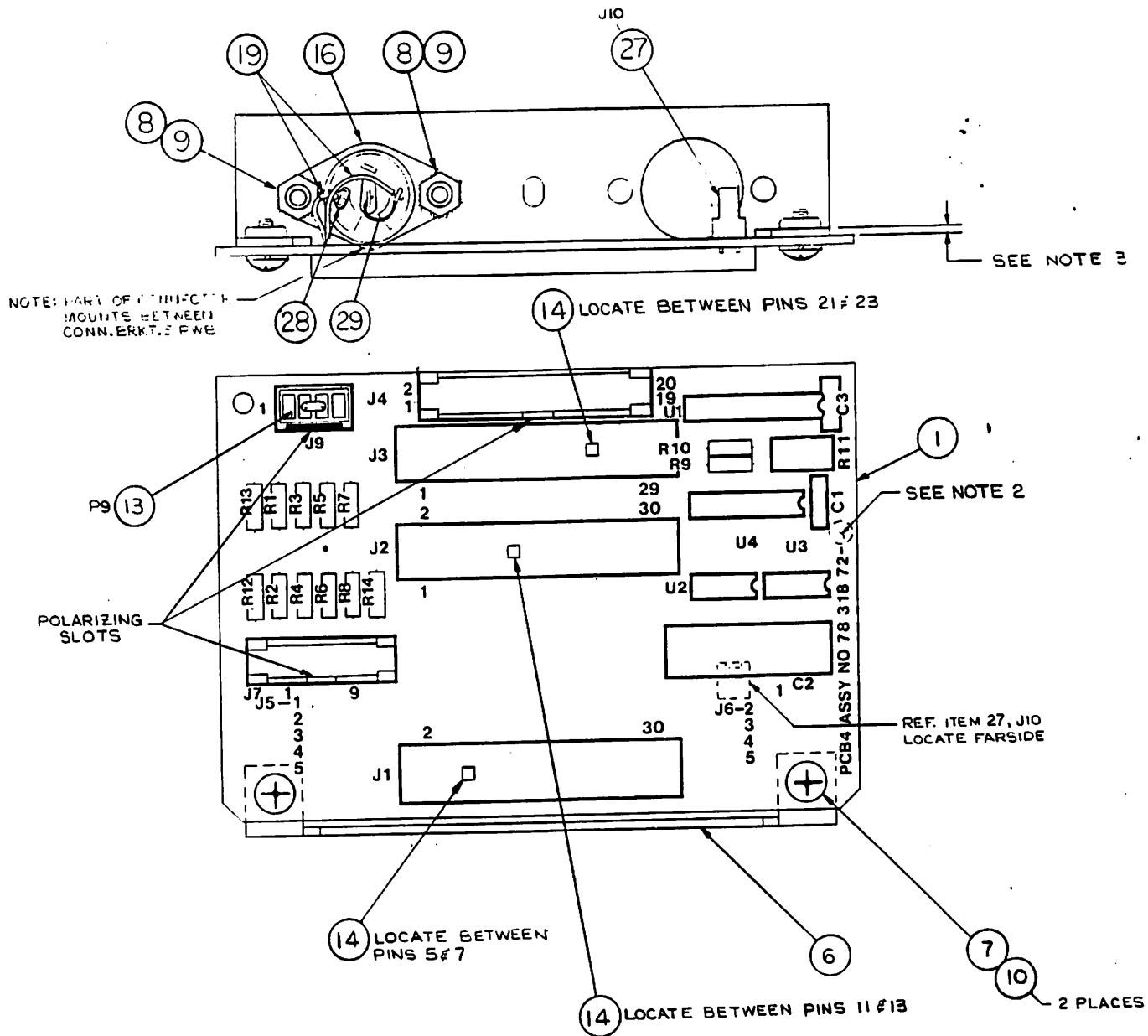
FIGURE 6.31 PARTS LOCATION DIAGRAM, OXYGEN/AIR CYLINDER MOUNTING BRACKET

TABLE 6.31 OXYGEN/AIR CYLINDER MOUNTING BRACKET, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
—		OXYGEN/AIR CYLINDER MOUNTING BRACKET . . .	78 459 71
1		Cylinder Holder, Lower	78 459 00
2		Cylinder Holder, Upper	78 459 10
3		Knob, Knurled	20 045 05
4		Not Used	
5		Screw, 1/4–20 x 3/4, CP, HX, SS	99 056 96
6		Washer, LK, SP, 1/4, SS	99 125 53
7		Chain Assy., Wrench	78 410 76
8		Screw, 8–32 x 1/2, TR, PH, SS	99 031 99
9		Washer, No. 8, LK, SP, SS	99 122 95
10		Nut, Hex Acorn, 1/4–20, SS	99 109 17
11		Washer, FL .26 I.D. x .50 O.D. x .06T, ... SS	99 125 24
12		Screw, 1/4–20, CP, HX, S Z1	99 060 81
13		Nut, Hex, 1/4–20, SS	99 109 00
14		Spacer, Alum., .406 O.D. x .27 I.D. x 2.94 LG	78 459 15
15		Clip, Plastic, Snap, SLF ADH, ... 0.38 I.D.	78 163 40
16		Nut, Hex 8–32, SS	99 106 01

IICS PARTS LIST



NOTES:

1. ASSEMBLY OF BOARD TO CONFORM WITH SPEC. NO. 00 845 12.
2. MARK ASSEMBLY REVISION LEVEL IN AREA SHOWN WITH .091.03 HIGH CHARACTERS USING A PERMANENT SMUDGE-PROOF INK, COLOR TO CONTRAST WITH BOARD MATERIAL.
3. COMPONENT LEAD AND SOLDER BUILD UP NOT TO EXCEED .06 MAX. FROM SURFACE OF BOARD.
4. **CAUTION:** ASSEMBLY CONTAINS STATIC SENSITIVE DEVICES, SPECIAL HANDLING REQUIRED.

FIGURE 6.32 PARTS LOCATION DIAGRAM, PCB4 ASSEMBLY, MOTHERBOARD

TABLE 6.32 PCB4 ASSEMBLY, MOTHERBOARD, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
		PCB4 ASSEMBLY, MOTHERBOARD	7831872
		NOT USED	
2		NOT USED	
3		NOT USED	
4		NOT USED	
5		NOT USED	
6		BRACKET, CONNECTOR	7831825
7		SCR, 4-40 x 1/4, TR PH SS	9901056
8		WSHR, #4 LK SHE SS	9912137
9		NUT, No. 4, HX SS SMALL PATTERN	9910335
10		WASHER, NO. 4, LK SP SS	9912136
11	C1	CAP, .1 MF, 10% 50V	17 AY 646
12	J9	CONN, PC HDR LKG SGL ROW 4 POSN	17 BP 803
13	P9	PLUG ASSY, ALARM ENABLE	7832750
14		KEY, POLARIZING	17 BP 642
15	J1,2,3	CONN, RCPT CARD EDGE PC MTG	17 BP 632
16	J8	CONN, RCPT FEMALE 3 POSN	1772426
17	J4	CONN, RCPT MALE 20 CONTACTS	17 BP 653
18	J7	CONN, RCPT MALE 10 CONTACTS	1773234
19		WIRE SET	7831830
20	C3	CAP, 0.1 MFD, 10% 50V	17 AY 640
21		NOT USED	
22	U4	IC, CMOS 4x2 INPUT NAND 4011	1762977
23	U3	IC, PWR DRVR 3633	1762952
24	U2	IC, CMOS 3634 PERIPHERAL DRIVER	1763011
25	U1	IC, CMOS 12 STG BIN CNTR 4040	1762989
26	R12	RES, 69.8K 1% 1/8W FILM	17 AF 369
27	J10	CONN, PC HDR LKG SGL ROW 2 POSN	17 BP 801
28		SLEEING, HT SHRK CLR .046 ID RCV	1702512
29		WIRE, BUSS 22 AWG SOLID COPPER	
30	R1	RES, 2K 1% 1/8W FILM	17 AF 221
31	R2,13	RES, 20K 1% 1/8W FILM	17 AP 317
32	R3,9,10	RES, 10K 1% 1/8W FILM	17 AF 288
33	R4	RES, 4.99K 1% 1/8W FILM	17 AF 259
34	R5	RES, 200K 1% 1/8W FILM	17 AF 413
35	R6	RES, 100K 1% 1/8W FILM	17 AF 384
36	R7,14	RES, 49.9K 1% 1/8W FILM	17 AF 355
37	R8	RES, 24.9K 1% 1/8W FILM	17 AF 326
38	R11	RES, VAR 50 OHM 6.5W, PCB HORIZ. ADJ.	17 AN 004
39		SPEAKER ASSEMBLY (NOT SHOWN AND NOT INCLUDED WITH PCB ASSY)	7830570

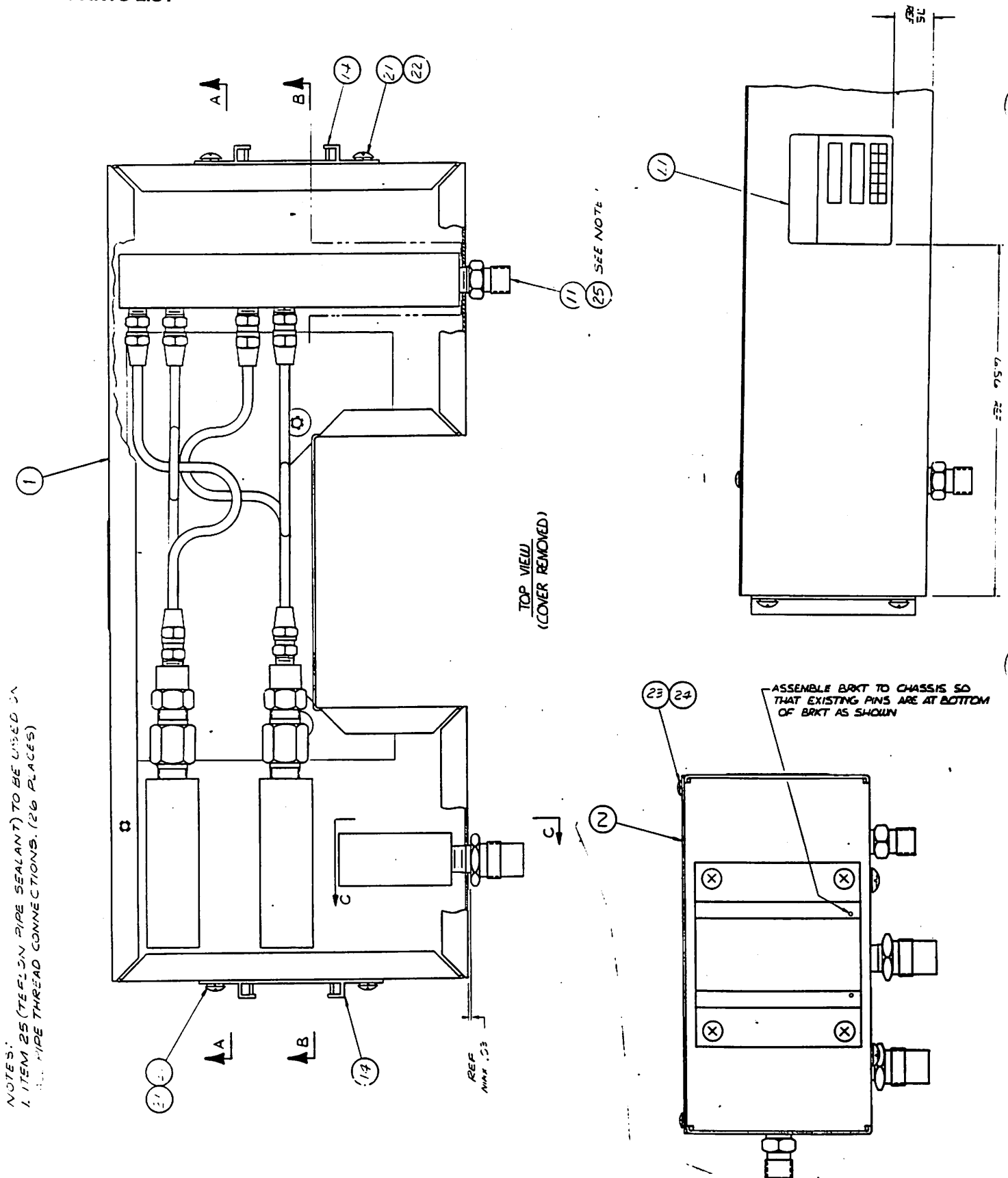


FIGURE 6.33 PARTS LOCATION DIAGRAM, RESUSCITATION MODULE
(Sheet 1)

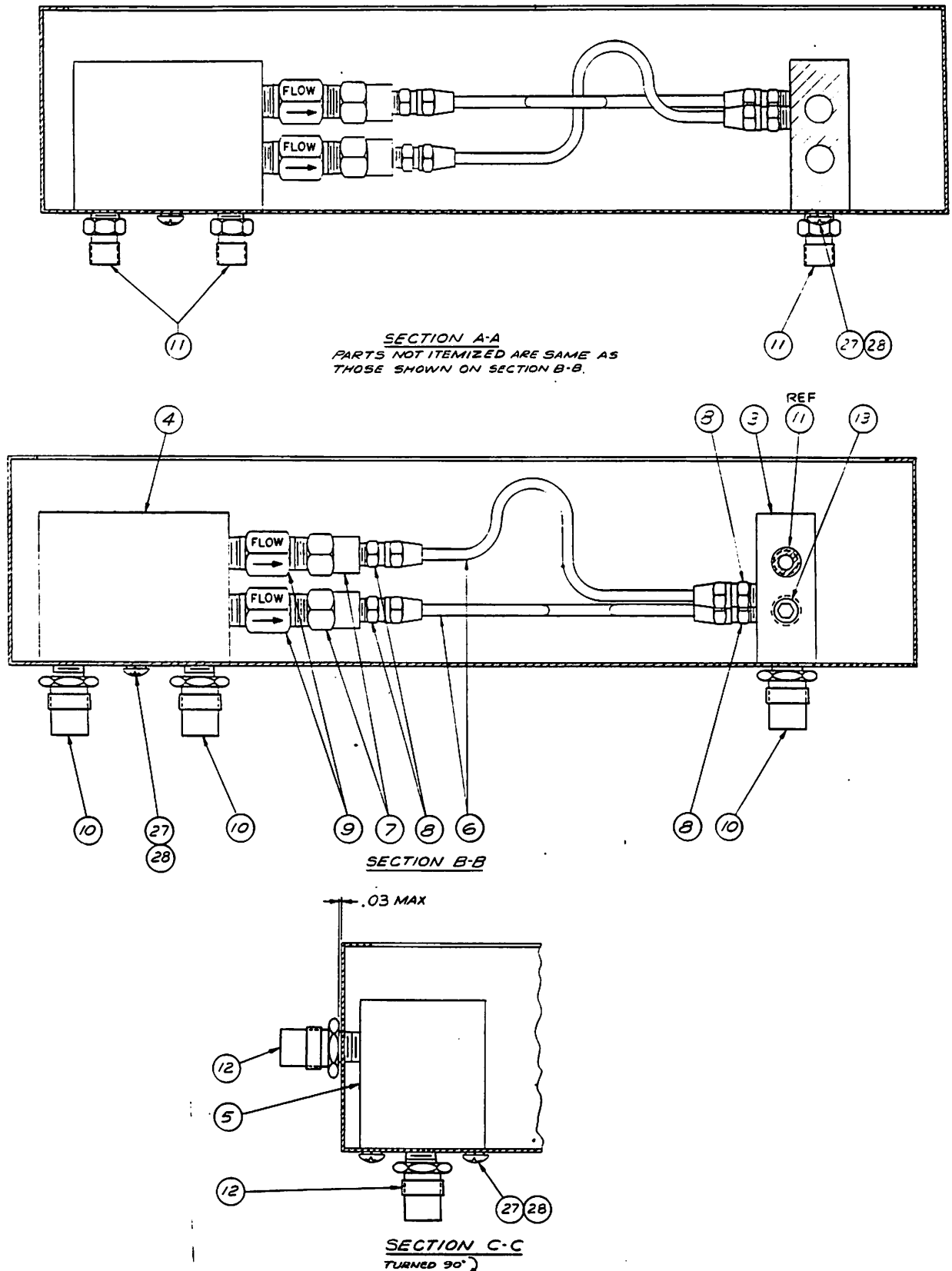


FIGURE 6.33 PARTS LOCATION DIAGRAM, RESUSCITATION MODULE
(Sheet 2)

TABLE 6.33 RESUSCITATION MODULE, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIGNATION	DESCRIPTION	PART NUMBER
-		RESUSCITATION MODULE	78 930 44
1		Chassis, Marked, English	78 455 35
2		Cover, Resuscitation Module	78 455 20
3		Manifold, 02/Air	78 456 05
4		Manifold, 02/air (Small)	78 456 06
5		Manifold, Vacuum	78 456 07
6		Tube, Copper Assy	78 425 75
7		Bushing, Reducing 1/4 x 1/8 Female NPT	78 456 04
8		Connector, Male	78 423 20
9		Check Valve	78 456 09
10		Ftg., Air, Shut-Off, Diss. Male	78 435 26
11		Ftg., 02, Shut-Off, Diss. Male	78 435 31
12		Ftg., Suction, Shut-Off, Diss. Male	78 435 21
13		Plug, Pipe 1/4 NPT	20 068 28
14		Bracket Assy, 02 Blender	78 431 70
15		Not Used	
16		Not Used	
17		Not Used	
18		Not Used	
19		Not Used	
20		Not Used	
21		Screw, 8-32 x 5/16 TR PH SS	9031 05
22		Washer, LK #8 SP SS	9122 95
23		Screwyn 6-32 x 1/4 TR PH SS	9022 72
24		Washer, LK #6 SP SS	9122 16
25		Compound, Pipe Sealant (Teflon)	9902 84
26		Bag, Polyethylene 18 x 24	9900 47
27		Screw, 10-32 x 5/16 TR PH SS	9040 86
28		Washer, LK, SP #10 S CA	9124 16
		Mounting Hardware and Blender	
		Bracket (not shown)	
29		Blender, Bracket	8431 20
30		Screw, 8-32 x 5/16 TR PH SS	9031 05
31		Washer, Lock, #8 SP SS	9122 95
32		Screw, 1/4-20 x 2.50 CP HX S CA	9060 11
33		Washer, 1/4 Lock SP5	9125 53
34		Spacer, 1/8' Dia.	8455 25

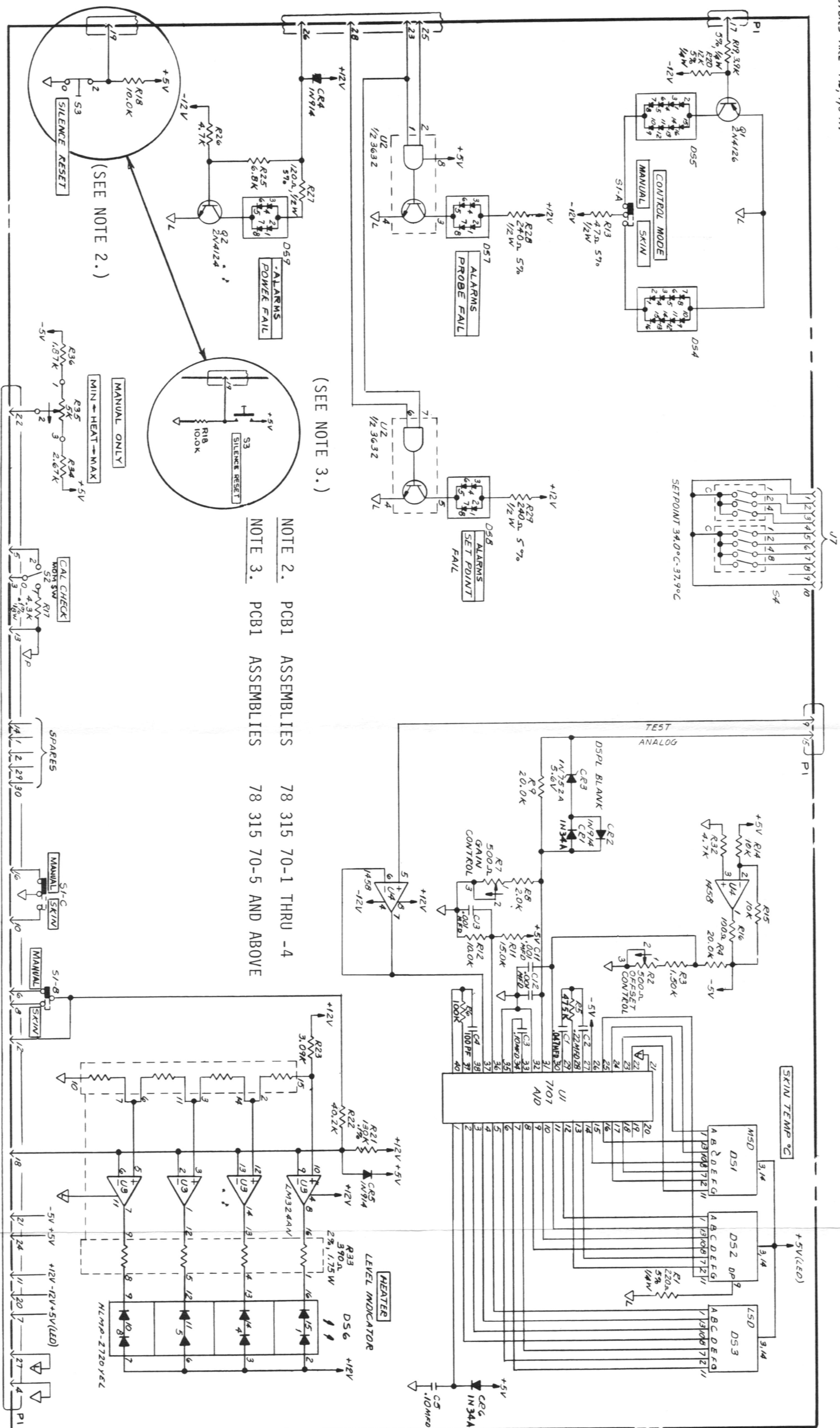
SECTION 7 DIAGRAMS

7.1 GENERAL

This section provides schematic and wiring diagrams for the equipment.

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NOTES
1. UNLESS OTHERWISE SHOWN ALL
RESISTORS ARE 1%, 1/8 W.



NOTE 2. PCB1 ASSEMBLIES 78 315 70-1 THRU -4
NOTE 3. PCB1 ASSEMBLIES 78 315 70-5 AND ABOVE

LAST COMPONENT USED

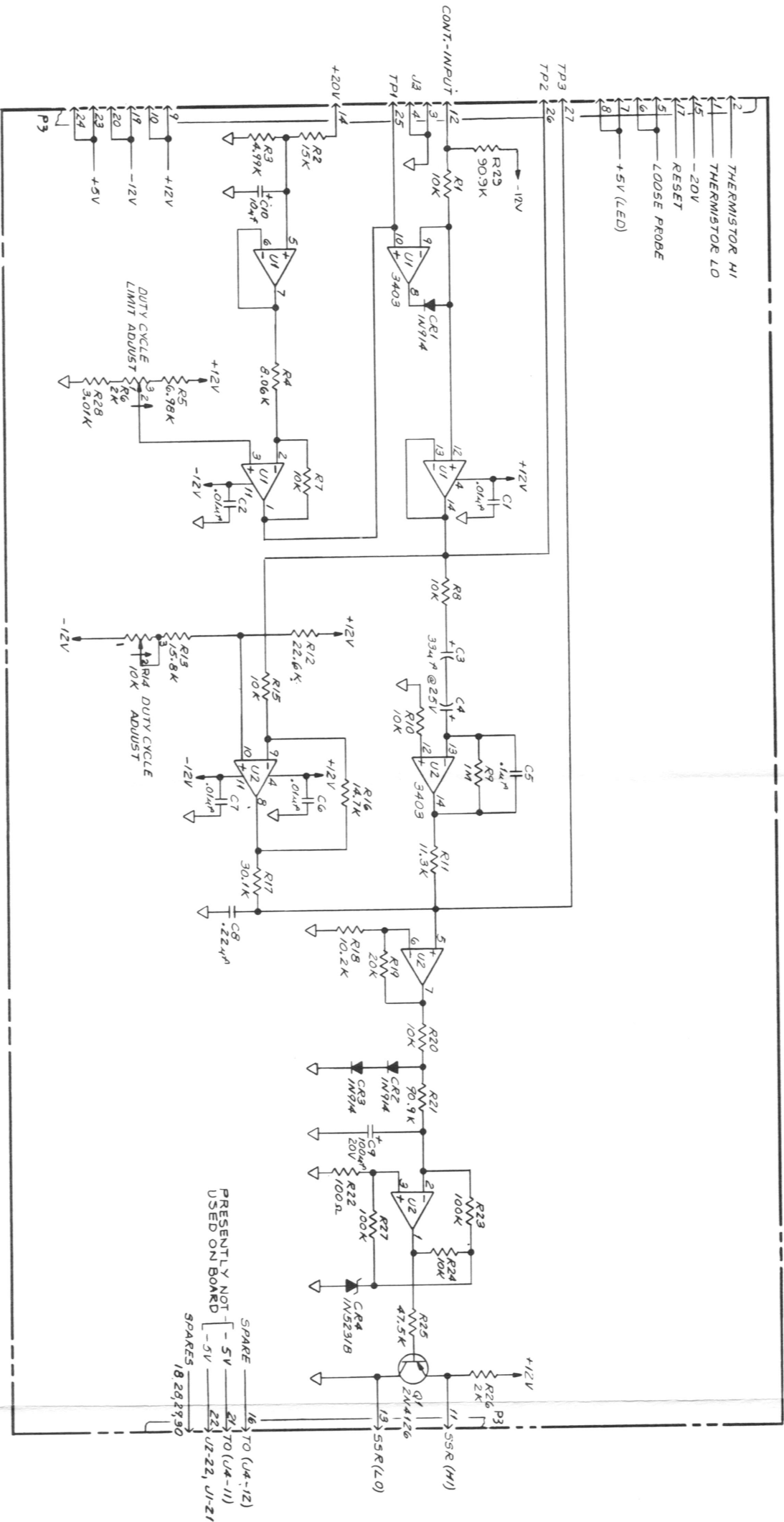
USED	OMITTED
C13	C47, 8.2, 10
C16	
D57	
R36	R10, 24, 30, 31
S4	
U4	
P1	

FIGURE 7.2 SCHEMATIC DIAGRAM,
CONTROLLER DISPLAY
BOARD, PCB1

PARTS LIST			
ITEM NO.	QTY	U/M	DESCRIPTION

REVISIONS			
1	ISSUE	02/07/07	27
2	REV	01/10/08	
3	REV	01/10/08	
4	REV	01/10/08	
5	REV	01/10/08	
6	REV	01/10/08	
7	REV	01/10/08	
8	REV	01/10/08	
9	REV	01/10/08	
10	REV	01/10/08	
11	REV	01/10/08	
12	REV	01/10/08	
13	REV	01/10/08	
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16	REV	01/10/08	
17	REV	01/10/08	
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37	REV	01/10/08	
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94	REV	01/10/08	
95	REV	01/10/08	
96	REV	01/10/08	
97	REV	01/10/08	
98	REV	01/10/08	
99	REV	01/10/08	
100	REV	01/10/08	

NOTES:
1. UNLESS OTHERWISE SHOWN ALL
RESISTORS ARE 1%, 1/8 W.

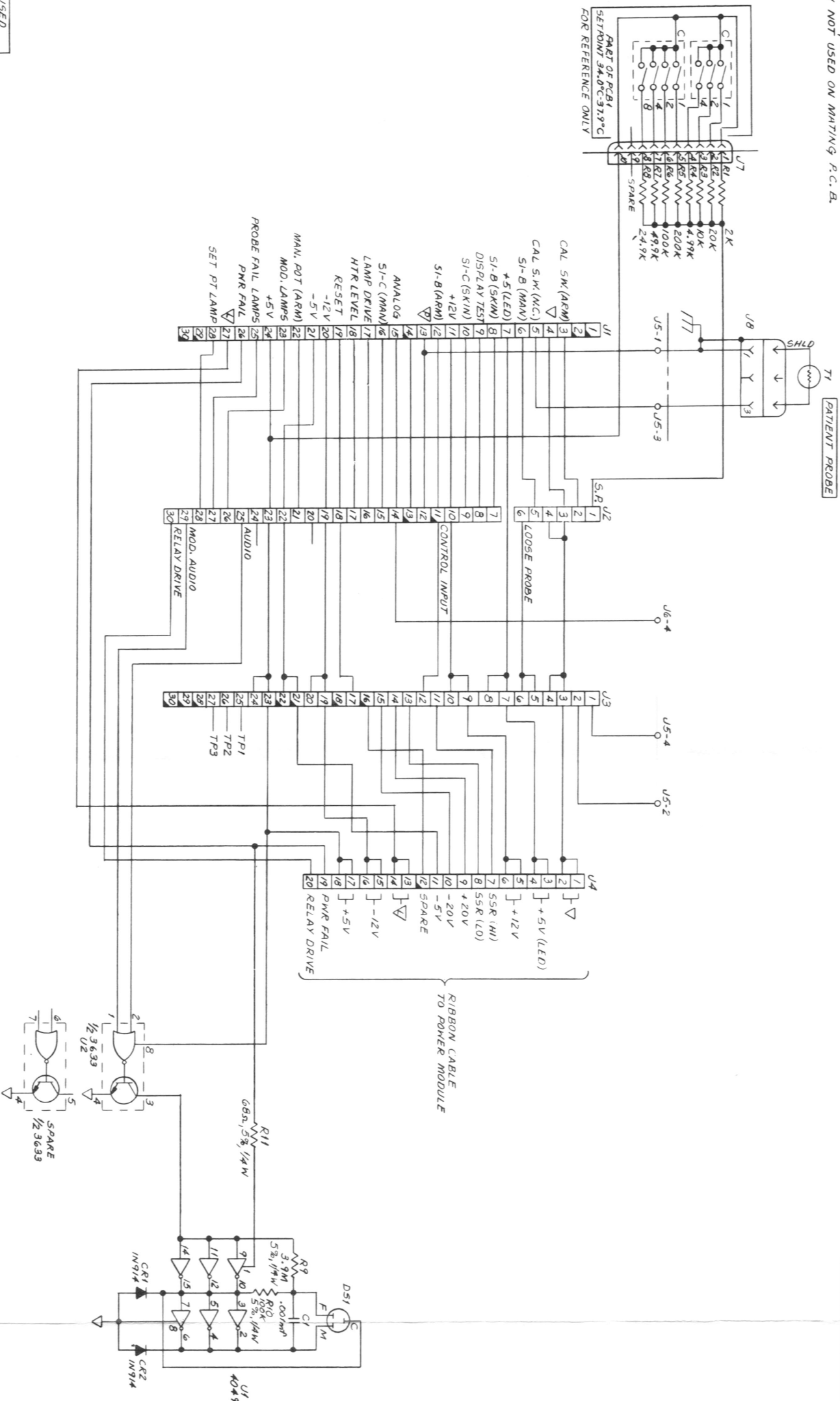


LAST COMPONENT USED	OMITTED
U5	
C10	
C9	
P3	
P28	
U2	

PARTS LIST				REVISIONS	
ITEM NO.	QTY	U/M	DESCRIPTION	DATE	BY
1	1	PCB	PCB3	11/12	11/12
2	1	PCB	PCB3	11/12	11/12
3	1	PCB	PCB3	11/12	11/12

FIGURE 7.4 SCHEMATIC DIAGRAM,
CONTROLLER CONTROL
BOARD, PCB3

- NOTES:
1. UNLESS OTHERWISE SHOWN ALL RESISTORS ARE 1/8 W.
2. ☐ PRESENTLY NOT USED ON MATHING P.C.B.



LAST CNDUT USED	OMITTED
USED	
C1	
CR2	
DS1	
U8	
R11	
T1	
U2	
TP3	

PARTS LIST				REVISIONS	
ITEM NO.	DWG NO.	IDENT NO.	DESCRIPTION	QTY	U/M
1	1	1	1	1	1

FIGURE 7.5 SCHEMATIC DIAGRAM,
CONTROLLER MOTHERBOARD
PCB4

7-13/7-14

CM78-1 SERIES-00 THRU SERIES-02
AND CM78-2 SERIES-00

PARTS LIST				REVIEWS	
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M
1	ISSUE				
2	REV				
3	REV				
4	REV				
5	REV				
6	REV				
7	REV				
8	REV				
9	REV				
10	REV				
11	REV				
12	REV				
13	REV				
14	REV				
15	REV				
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100	REV				

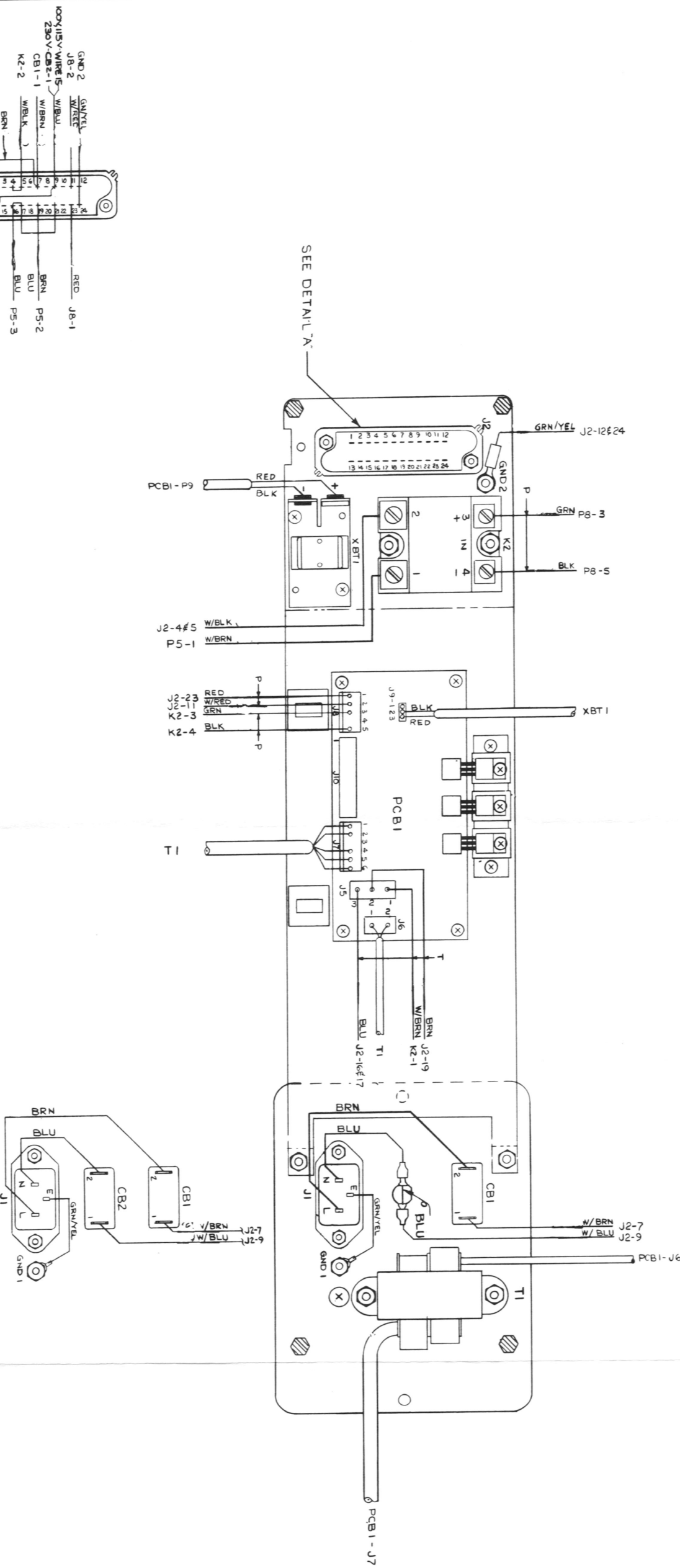


FIGURE 7.6 WIRING DIAGRAM, POWER MODULE AND WARMER

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1

NOTES:
1. UNLESS OTHERWISE SHOWN ALL
RESISTORS ARE 1% 1/8W.

THERMISTOR	
20	8573
21	8795
22	7936
23	7494
24	7170
25	6861
26	6567
27	6288
28	6022
29	5766
30	5527
31	5287
32	5078
33	4870
34	4671
35	4481
36	4300
37	4127
38	3962
39	3805
40	3655

SETPOINT
SWITCH ASSEMBLY
PCB1
34.0°C - 37.9°C

PCB2
7 316 7 (N.W.C.)
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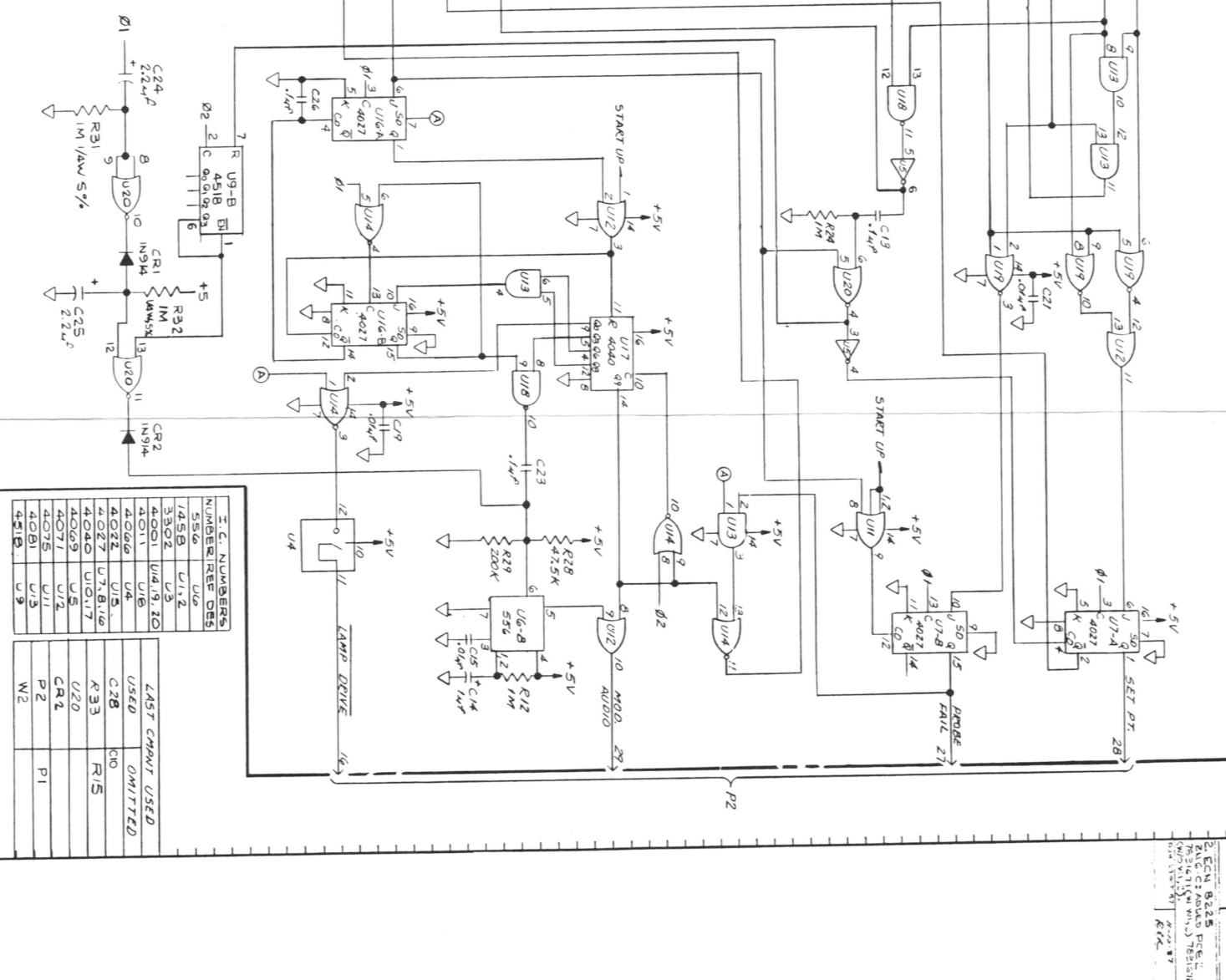
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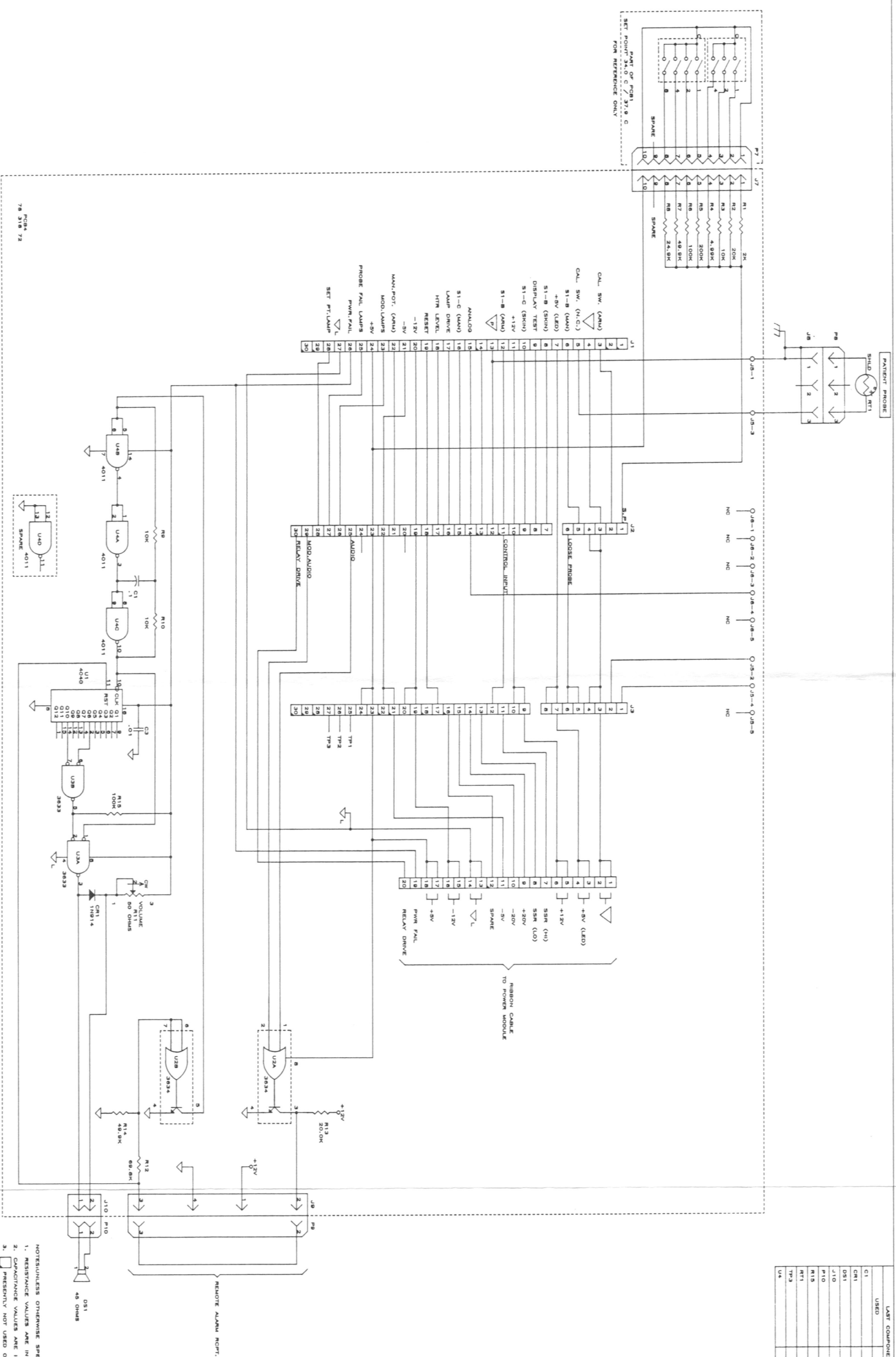
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7 316 7 (N.W.C.)

PARTS LIST		REVISIONS	
ITEM NO.	DESCRIPTION	QTY	U/M
1	SCHEMATIC, PCB 2, MEASUREMENT/DIGITAL, IICS/BRW CONTROLLER		





ART COMPONENT USED		REVISIONS
USED	OMITTED	
C1		2- ECH 9372
CRI		REVISED ECHDRAN
D81		WAS, USB, ADDED RID
J10		4-1, AND 1-2, AND COM
		TO D410 47
P10		2- 27000-81
R15		1-5-51 RFL
RT1		
TP-3		
VA		

NOTES/UNLESS OTHERWISE SPECIFIED

1. RESISTANCE VALUES ARE IN OHMS, $10^3/\Omega$, $10^6/\Omega$.
2. CAPACITANCE VALUES ARE IN MICROFARADS
3. ☐ PRESENTLY NOT USED ON MATING P.C.B.